Product Overview

Product Name
STEMpedia Starter Package

Product Tagline
Make STEM child's play!

Product Description
The STEMpedia Starter Package is an all-in-one DIYing package that consists of everything one needs to set foot into the world of DIYing, including, but not limited to, the following:

1. **Hardware that is easy to work with:** The first part of the Package is the evive Starter Kit. It consists of evive - an all-in-one prototyping platform with a plug-and-play interface that makes DIYing child's play - and 380+ mechanical and electronic components for making over 100 interesting projects. What's so special about evive? It has already been widely accepted for its ease of use by thousands of customers across 40+ countries, has replaced LEGO in many STEM training centers across India, and has been supplied to over 50 schools under a Government of India program.
2. **Software to define actions:** The second part is PictoBlox, a Scratch 3.0-based graphical programming platform that makes coding simple and fun thus helping develop problem-solving skills without worrying about anything else.
3. **App to control projects and give them flexibility:** Dabble, our ingeniously-developed project-making mobile application is exactly that! It transforms any Smartphone into an I/O device, lets one control and communicate with the hardware wirelessly, and provides access to Smartphone features and sensor data for their projects.
4. **Learning resources that help learn the 'hows' and 'whys':** The fourth part is 'The STEM Safari', a set of three online courses on electronics, programming, and robotics, which cover the essence of these three and include quizzes, periodic assessment, certification etc.

Retail price
$289

Crowdfunding launch price
$169

Product launch date
TBA. Expected between 24th January 2019 and 7th Feb 2019 on Kickstarter/ Indiegogo.

What problems is STEMpedia solving with this product?
1. **Entry barrier to learning-by-doing/ DIY-ing**
   The process and tools available for project-making are complex and require a certain amount of skill, thereby discouraging a huge fraction of youngsters from participating in such activities. The STEMpedia Starter Package, on the other hand, offers futuristic hardware which is simple, intuitive, menu-based, and has a plug-and-play interface which greatly reduces the complexity in project-making thereby requiring no prerequisites and encouraging users with no or minimal skills to engage in such activities.

Other offerings of the package, namely a Scratch 3.0-based graphical programming platform (PictoBlox), an indigenously developed project-making mobile application (Dabble), and carefully tailored online courses further reduce the fear and stigma associated with project-making. The programming platform acts as an engaging way to learn how to code without worrying about the syntax, the app transforms a Smartphone into a single virtual I/O device, and the online courses introduce users to the essence of electronics, programming, and robotics by teaching them not only the 'hows' but also the 'whys' of DIY-ing.

2. **Dependence on a wide variety of devices during the process of project-making**
   Imagine a 10-year-old planning to make an XYZ kind of robot for the first time and she learns that it will require a few dozen components for assembling, an ammeter and voltmeter for testing, something else for wireless communication, something else for visualization, and so on and so forth. Would this motivate the 10-year-old further towards her idea or scare her off? That is where our all-in-one prototyping platform comes in, offering all these features in a single device, accompanied with accessories and a variety of learning resources to simplify the task further.
   The all-in-one electronic prototyping platform in STEMpedia Starter Package, evive, caters to almost all measurement and control needs of the user, thereby reducing the need to go to a variety of devices. Plug-and-play interface for connecting commonly used hardware, menu based intuitive interface for control, current and voltage sensing features (built-in ammeter and voltmeter), data acquisition-visualization-logging features (built-in oscilloscope), wireless communication options, etc. are available in a single device, thereby reducing dependence and simplifying the process further.

3. **Delayed gratification**
   The younger a person is, the shorter his span of attention and patience. Adults can work on a project for months if we see gratification coming our way, but young children tend to give up very soon; in a matter of days if not hours if the thing they are making doesn't work soon. With such complexities, the number of trial and error iterations is higher, and gratification of project completion is delayed to an extent where it discourages a huge fraction of students and hampers their confidence.
   The kit in STEMpedia Starter Package is so well-knit together and supported with relevant quality content, that the project-making procedure is tweaked in such a manner that every project is broken down in to multiple mini-projects, allowing gratification and sense of accomplishment several times during the process. This keeps younger users motivated throughout and drastically improves their chances of sticking with the hobby for longer and improves their learning outcomes.

4. **Segmented availability of resources**
   Again, since the market is new, all the resources needed for learning-by-doing are usually not available at a single place, someone offers a good kit, someone else would offer a decent training program and somebody else would be good at writing tutorials etc. But how easy would it possibly be to find the best of each world, sync them up and keep toggling around?
   With STEMpedia Starter Package, such a problem becomes a thing of the past, because every resource highlighted by our beta consumers has been made available at a single place. Be it hardware, programming interface, controller application, tutorials, example projects, online courses or community forums - everything is available at a single place.

5. **Demotivation induced by platform shifting (fear of change)**
   One would start with the easiest method/platform when they are not skilled at project-making, but it will become boring and monotonous upon acquiring enough skill and a newer, skill-appropriate method with skill-appropriate complexity will be required for the interest to stay alive. This requires

a shift to another platform which, in turn, requires a decent amount of efforts thereby discouraging a lot of users from proceeding further.
The key to STEMpedia Starter Package, the prototyping platform inside it (evive), and the whole product range built around it is that its usability grows with the user's skill. We have reduced the entry-barrier to prototyping while maintaining a broad scope of learning and applications. This means that the more you learn, the more you will find to do with the hardware, and hence the need of switching the hardware platform reduces drastically. Be it when you are just a beginner and learning or exploring (learn), be it when you are in to the process and making projects (build), or be it a stage when you have learned enough and debugging becomes your biggest challenge (debug)- evive stays with you and stays relevant throughout the cycle. Be it when you didn't knew how to code (graphical programming interface), to when you learnt coding (syntax programming interfaces) to when you switched to advance coding interfaces (MATLAB/ LabView/ etc.), our hardware is compatible with all of them, staying relevant for users at all skill levels. A true life-long companion.

6. **Frequent failures**
   More often than not, users get stuck on problems due to malfunctioning of some component or the other, maybe sensors (inputs) or actuators (outputs), or due to issues in the program. These problems are rarely predictable and take a lot of time in getting identified and rectified (the process of debugging), which diminishes the enthusiasm, As a result, young users become less motivated to continue or opt for activities related to electronics, programming, and robotics, or STEM in general, in future.
   There can be two main reasons for projects to malfunction: hardware and program. Specifically while building bigger projects, which use a variety of sensors and actuators, finding out which part of the project isn't functioning properly becomes a mammoth task to do. This is where evive's (part of STEMpedia Starter Package) menu interface comes to rescue, using which, user can test each and every module separately without switching circuits, thereby saving time and efforts in debugging a project and keeping the user motivated for long. Once the hardware works perfectly, the user can move further with checking the code.

Uniqueness - What separates STEMpedia from its competitors? Why will the customers only work with STEMpedia?

1. The STEMpedia Starter Package offers one of the most versatile and intuitive prototyping platforms in the world (evive), which is extremely easy to use and whose usability grows with the skills of the user. Along with that, a project-making guide, 380+ electronic and mechanical components with over 100 possible projects, 3 online courses, a Scratch 3.0-based graphical programming platform, and a project-making mobile application. Match that!
2. Reduced incremental costs by design of our product range- one central product, everything else as an add-on. Want to make a few projects with your home garden? Have an additional kit for barely $50 and you can make 5 of those projects. How affordable!
3. Easily accessible learning content for users of all skill levels and needs - online courses (part of the STEMpedia Starter Package) for beginners, tutorials for the nerdiest, example projects for the idea-hungry, and detailed technical documentation for experts. There is something for everyone.
4. We bring everything needed for STEM learning in one place, thereby making it more comfortable for the user and offering a richer learning experience. If the user will not need to go anywhere else for any extra requirement, he/she might have, the probability of them sticking around for longer improves.

What are the features of the product, their functions and value for the user?

Feature	Function	Values
The Brain (evive): An all-in-one prototyping platform, i.e. solving almost all prototyping needs of a user with a single prototyping device, with a plug-and-play interface.	Allows the user to perform a wide range of activities related to learning, building projects and debugging- from connecting commonly used actuators like DC motors or servos without having to worry about circuitry for the same and controlling them from the menu itself, to sensing currents and voltages, and a multitude of other stuff.	The user doesn't have to spend time, money, and efforts in dealing with and handling several devices together which, in turn, saves time and reduces complexities in project-making.
Versatile Electronic and Mechanical Parts: Intelligently designed & reusable mechanical parts.	Allows making a broad range of projects with the same set of mechanical parts.	Reduces cost per project for the user.
Graphical Programming Platform (PictoBlox): A Scratch 3.0-based drag and drop programming software.	To provide the user with a friendly, easy-to-navigate programming platform that allows working both on the platform and with the hardware. It also allows the user to make games and animation.	The user doesn't have to worry about memorising the syntax as is the case in traditional programming thereby focussing only on developing problem-solving and decomposition skills.
Project-making Mobile Application (Dabble): A mobile application that transforms a Smartphone into a virtual I/O device.	Lets the user control hardware via Bluetooth, communicate with it, access sensors like the accelerometer, GPS, and proximity and other features of his/her Smartphone.	Eliminates the need to search for/have multiple applications/ external sensors that provide only a handful of functions.
Premium Online Courses: Courses on electronics, programming and robotics with necessary chapters, resources, assessments and certification.	To cater to the needs of those users who have no idea where to begin or who want to learn in a structured fashion.	Structured way of learning to cover all required concepts with utmost clarity, and certification.

What items consist of our product offering in the campaign?

Our primary product offering for the campaign, the STEMpedia Starter Package, which acts as a tool for beginners in project-making, consists of:

1. The evive Starter Kit, which comes with evive, one of the most versatile and intuitive prototyping platforms, a project-making guide, and 380+ electronic and mechanical components using which one can make over 100 projects.
2. A Scratch 3.0-based graphical programming platform which we call PictoBlox.
3. A project-making mobile application called Dabble that transforms your Smartphone into a virtual I/O device and lets you control hardware via Bluetooth, communicate with it, access sensors like the accelerometer, GPS, and proximity and other features of your Smartphone.
4. A set of three online courses on electronics, programming and robotics, entitled The STEM Safari, which covers all essential topics related to the subject matter, and includes quizzes, assignments and certification.

There will be add-on kits offered as add-on perks during the campaign.

What are the add-on kits?

Add-on kits are kits for making application specific projects, such as:

1. Agriculture/gardening kit (drip irrigation, automatic plant monitoring system etc.)
2. Modular robotic arm kit (sketching robot, pick and place robot etc.)
3. Internet of things kit (home automation projects, motion sensing projects etc.)

What is the story behind the product?

It all started as a hobby during our college days where we were making some robot or some electronic gadget every now and then. After some time, our college-time hobby was churning more and more projects every semester, and we started noticing technology gaps which were slowing us down. The biggest ones were how can we develop prototypes faster by removing repetitive work and how to tame the mammoth task of testing a variety of components on our robots in the event of a malfunction. Every part of those projects was unique and in the event of a malfunction, each one required a different testing circuit for figuring out faults if any - tedious! A different circuit to test motors, a different one to test batteries, another one for sensors; man, the list was endless. At times it took 4 days for a team of 99 percentiles to find out even the very basic problems with the circuit. We tried looking for a solution and found nothing anywhere; thus came the idea of developing a Universal Testing Board for ourselves which could test almost every component on those projects.

A few semesters later, we decided to take this idea as a startup but found out that our solution was way too nerdy to find a decent market size. There weren't enough number of people on the globe facing the problem we just solved. So we went out for market research, found out an answer, made several changes to the concept and created evive - one device to solve all learning, project-making, and debugging needs. The device was great; people loved it when we launched it on Indiegogo in 2016. Despite all this, the product was still very niche and could only be used by hobbyists at a particular skill level.

We reached out to our customers again and started exploring how can we fit this ideology to a younger market segment: pre-teens and teenage children who are at a very nascent stage of learning-by-doing or DIYing, are either beginners who want to learn how to make such projects or have tried once and found it too complex for themselves. The segment was big (~100 million potential users) and therefore explored what this segment needed - great hardware, easily useable kits, and quality learning content. So, we developed

the evive Starter Kit (based on our already established device, or brain- evive) which allows much easier project making; online courses with the help of which children could start from the very basics; started working on a graphical programming interface- PictoBlox (for kid-friendly coding) and a controller application- Dabble (to send commands to your projects from your smartphone); and a vast learning center.

The amalgamation of these tools for learning-by-doing - from the Starter Kit, online courses, programming interface, and mobile application is what we call the STEMpedia Starter Package - a product to help you learn while making complex modern projects with ease, thereby improving dexterity, algorithmic thinking and problem-solving abilities of young minds.

How do you use the product? How does it work - step by step?

Upon receiving the product, the user will

1. Find the STEM Safari thank you letter and register himself/herself on the STEMpedia Learning Center using the redemption link and redemption key mentioned in the letter. This will give the user access to all three courses covering electronics, programming, and robotics.
2. Find the book and the components list inside the book and match them with contents of the package.
3. Pick the evive leaflet and follow the instructions to install the battery in evive.
4. Now, the user has everything ready to start making innovative projects. He/she has both the book and the online courses for commencing his/her journey into the world of DIYing.
5. During the journey of project building user will have to install some software/applications to program evive like PictoBlox and Arduino IDE, instructions for which are available both in the book and the online courses.
6. To control the robots using their smartphone, the user will have to install Dabble from Play Store.

Component List – evive Starter Kit

Category	Components
Brain	• 1 x evive – Electronics prototyping platform with USB cable
Electronics Components	• 10 x Switch (Pushbutton) • 20 x LEDs – Red, Blue, Green & Yellow – 5 each • 2 x Capacitor (220 or 100 uF) • Resistor Kit – 15 x 15 x 220 Ω, Resistor, 10 x 1 kΩ Resistor, 10 x 4.7 kΩ, Resistor, 15 x 10 kΩ Resistor & 10 x 1 MΩ Resistor • 6 x Alligator Clips • Jumper Wires - 20 x 20 cm Jumper Wire (Male-Male), 20 x 20 cm Jumper Wire (Male-Female), 20 x 20 cm Jumper Wire (Female-Female) • 1 x Pair of sensing cables
Sensors	• 1 x Dual Axis Joystick Module • 1 x Distance Sensor (Ultrasonic Sensor) • 2 x IR Proximity Sensors • 8 x Light Sensor • 10 x Switch (Pushbutton)
Actuators or Motion Modules	• 2 x Micro Servo Motor (Includes 3 servo horns and self-threading screws)

	• 2 x Dual Shaft Motor (with 2 Brackets)
Wireless Communication	• 1 x Bluetooth Module [HC05]
Mechanical	• 1 x Distance Sensor Holder • 2 x Wheel • 1 x Base Plate [Chassis] • 10 x Other laser cut parts • Nuts and Bolts - 6 x M2 bolts of 12 mm Length | 25 x M3 bolts of 8 mm Length| 10 x M3 bolts of 12 mm Length | 6 x M3 bolts of 25 mm Length | 4 x M4 bolts of 16mm Length | 6 x M2 Nut | 25 x M3 Nuts | 4 x M4 Lock Nuts • Spacers [Standoff] - 2 x 15mm M3 (Male to Female) | 5 x 20mm M3 (Female to Female) | 4 x 30mm M3 (Male to Female) • Cable Ties • 1 x Castor Wheel • 1 x Screw Driver
Book	• Young Makers' Guide (15 chapters , ~100 pages)

Online Coursework Details – The STEM Safari

Course Name	Key Chapters
Basics of Electronics	• The Museum of Electronics • Signals City • Actuator Auditorium • Sensors Studio
Introduction to Programming with Scratch	• The Hall of Programming • Conditional Programming Estate • Scratch with evive • Games and Animations
Introduction to Robotics	• Introduction to Robots • Smartphone Controlled Robot • Follow the Enemy Robot • Obstacle Avoiding Robot • Pick and Place Robot