



DigiEduHack Solution
Utrecht - Digital Education Hackathon
Utrecht 2020
Challenge: Utrecht - Digital Education
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A Guide for an Environmentally Friendly Leaphy

Environmentally Friendly Leaphy

Leaphy is a small, leaf-shaped robot invented by students at our school in 2016 and is used for education on electrical engineering. Whereas its plastic package often becomes residual waste, we intend to reduce the use of plastic as much as possible and to use Leaphy for education on circularity.

Team: The Leaphers

Team members

Giel (12), Marit (12), Job (12), Thijs (13)

Members roles and background

7th grade students CorderiusCollege Amersfoort, the Netherlands

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Solution Details

Solution description

While Leaphy is a resounding success across the Netherlands, the robot is not environmentally friendly nor sustainable. To do justice to the name of the robot and reconcile its good intentions with its environmental impact we would like to reduce the plastic use by no longer packaging the leaphy in plastic. The leaphy was first packed in plastic bags that were then placed in a box. We then

adjusted the box so that no plastic bags are needed. The box will be divided in small cubicles in which the parts will be placed in a logical manner. We no longer want to pack it in plastic but in other materials such as cardboard.

Other ideas are:

- rubber tires: we would like to make them from recycled car tires.
- Technology: making leaphy technology more sustainable by means of agreements with companies that want to invest in it.
- batteries: we want to educate others about what to do with empty batteries and why it is important.

By doing so, we will create a Guide on the platform Guides, where information will be shared on how to make Leaphy environmentally friendly and sustainable. This platform will be accessible to anyone who is interested in Leaphy or sustainability. In this way, we want to invite other students who work with Leaphy or want to learn about sustainability. The students can not only read the Guide, but add information as well. The same counts for other experts that want to share their knowledge about circular use or sustainability. Hence, A Guide will be created with useful information about how to make Leaphy sustainable which can be used by other students to learn about this topic.

Solution context

We found out that the leaphy was packaged in a lot of plastic, namely 70 grams per leaphy, with 800 leaphy's per year that comes to 6.56 kilos of anti-static plastic and 10.88 kilos of ordinary plastic! We wanted to do something about it because this could no longer continue.

There is so much plastic in packaging at the leaphy and everything is thrown away after usage.

A list of all the plastic that is in the leaphy of packaging:

- 2 large plastic bags
- 3 medium plastic bags
- 4 small plastic bags
- 2 medium anti-static plastic bags
- 5 small anti-static plastic bags
- 3 foam pads

That is not little and 800 leaphies are made every year. So that whole list times 800 in a year? That is 6.56 kilos of anti-static plastic and 10.88 kilos of ordinary plastic per year. Everything is thrown away, and gets burned or worse, into nature. We have to do something about that!

There is also still little or no educational material about circularity for secondary education, while this is very important for a more sustainable society! Education is now often time and location bound. By making use of a Guide everybody can access whenever they want.

Solution target group

Especially the pupils in secondary education and with that also their teachers. But the parents of the students and their friends and family can also learn from it. The Guide is easy to find and access and will be made accessible to anyone who asks.

Solution impact

With this idea we try to make people aware that plastic use has really got out of hand. So we thought that instead of plastic bags, we could put the packaging in boxes that are put in the cardboard box. In total, the plastic is now 1 kilo per year, which is 16 kilos less! We are very happy with this, but we will always try to keep reducing plastic use. We have very little left of all the plastic that there is (17 kilos per year), namely 9 kilos per year. Still a lot, but nothing can be done about it at this moment. The only plastic we need is foam plastic to pierce parts in. Maybe you will think “that's only 0.5 kilos a year” but the parts themselves came straight from China. We cannot just ask the factory if they want to do without plastic, then everything will break during the flight. But we've gotten rid of a lot.

By making use of the Guide we aspire to connect people across the Netherlands, but maybe in the world as well. For it can be used across the globe and attracts people that are interested in the topics of sustainability and circular economies, the platform Guides is a perfect meeting area for all kinds of people. When students use this Guide or Leaphy it will hopefully increase their awareness about these challenges we are facing today while learning about interesting things such as recycling.

Solution tweet text

Goal: minimize Leaphy's plastic (now 17 kilos per years...); Solution: make squares in the boxes and the largest plastic bags are unnecessary. Prototype: several compartments, each box contains its own type of part. #SustainableLeaphy #plastic #recycle #leaphy #plasticsoup

Solution innovativeness

With many products no attention is paid to the environment, because today's companies only think about money and not about the welfare of the climate, animals and nature. We therefore started this project within our school to make leaphy (an educational robot) environmentally friendly. Often, sustainability is not taken into consideration when looking at robots because they are perceived to be so modern and futuristic already. Yet, is it overlooked that even with robots, maybe even more than with other products, the sustainable or recyclable level of all the technological or other parts has to be taken into account.

Solution transferability

We would like to believe that one day platforms as Guides will be used by all kinds of people in the world to share their personal and latest knowledge about circularity and sustainability. As such all kinds of technological businesses can use this Guide to enhance their products.

Solution sustainability

How are we going to do this?

We are going to call companies to ask if they can sponsor us or give us free stuff. And we also asked Bob (someone who works at the box company) if he could square the leaphy box instead of putting everything in plastic bags. Furthermore, we will also call a company if they have spare rubber tires for the wheels. Every school that is going to work with Leaphy will be made notified and invited to our Guide.

Solution team work

We are classmates after all, but we will certainly often make use of experts from outside school if the teacher does not know.

The collaboration went well, we are classmates after all! But working for a real client and calling in experts from outside school if the teacher does not know is something we will do more often.

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