

Biosensors, customisation, and prototyping

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Valorization

Translating research topics to concrete applications for the commercial market, is always a challenge. Academic research is crucial thanks to its role in pushing boundaries, and exploring unknown grounds. Many times, these unknown grounds prove to be infertile from a commercial perspective, even more for medical devices, where new products have a particularly long development life. Nonetheless, during my PhD, I had the privilege to work on a project that tried to close the gap between academia and the market. During my second year as a researcher, I had the chance to found a start-up, active in the educational field. The company, called Flui.Go Science, was established in March 2020 and has since produced its first product: The Flui.Go Kit (Figure 1). Flui.Go's mission is to bring science to young people in a more entertaining and engaging way.



Figure 1: Flui.Go's first product, the Flui.Go Kit

The Flui.Go kit is an education(-toy)tool, composed of transparent modular blocks with integrated fluidic channels. Featuring also a pumping system (further development of the work in Chapter 5), the kit allows students and children to build fluidic circuits by combining the blocks together. Such system is studied to allow creating and displaying scientific phenomena, in an engaging way (Figure 2). Whether by visualising a colour change of the fluid due to Ph variation, or by creating colourful candy-like spheres, the young students are guided by a digital handbook including pre-made experiments that allow children to play with physics, chemistry, mathematics and much more.



Figure 2: Visual appeal is essential for the Flui.Go Kit. The goal is to attract the student's attention and curiosity for the phenomena underlying the effects visualized.

The idea to develop an educational tool was born during my tutoring duties as a PhD candidate. The courses I tutored were mainly multidisciplinary courses focused on science, particularly on theoretical and practical skills in the laboratory. The students joining this course often had various high-school backgrounds, resulting in different preparations. However, all of them liked the hands-on experiments conducted in the laboratory. From this experience, together with a colleague of mine, I decided to extend the concept that we used in our

classes, to basic, introductory science classes. Thanks to the support of my supervisors and to the possibility to combine my PhD research topics with some activities performed at Flui.Go Science, I managed to push the project forward. In September 2019 the concept won a prize at an internal UM competition, which allowed us to kick-start our idea and create the first prototypes. Another significant milestone was the SWOL Grant (University Fund Limburg) that we secured at the end of 2019. Thanks to the funding acquired and the enthusiastic reaction from the people that got involved in the project, we founded the company in March 2020.



A team of motivated students from various faculties of Maastricht University joined Flui.Go, helping us improve on our prototypes and release our first beta version of the Flui.Go Kit. In parallel, we developed a business plan, established the first contacts in local schools and started a collaboration with professional educators and researchers to field test our prototypes. The results of our study are published in the INTED2022 (<https://library.iated.org/view/FANCHAMPS2022STE>), demonstrating how our Flui.Go Kit helps young pupils to develop a positive attitude towards science.



In late 2021 Flui.Go secured an agreement with 26 secondary schools in Limburg, with the goal of providing the Flui.Go Kit as an education support tool in STEM classes. This was an important milestone for Flui.Go and gave us the possibility to plan a large scale, commercial pilot-study. Today Flui.Go is collecting feedback from the schools that are using the kit and using this feedback to optimize our future strategy. In May 2022, Flui.Go Science, in Collaboration with the Open University of the Netherlands, secured the prestigious Comenius grant. The 50,000 euro funding will be spent to provide the Flui.Go Kit to educators across the Netherlands and evaluate the efficacy of the implementation of the Flui.Go Kit as a supporting tool in science classes.

At Flui.Go, we consider academic research a crucial part of our product development. Flui.Go Science was born as a research project, and we showed that research and valorization can not only coexist, but also thrive together. Our plans for the future are to continue improving our Flui.Go Kit, developing new experiments, but also to expand our range of products in order to provide educational tools to more and more young students. We want to give the best tools possible to the new generations, helping them learn more and become the game-changers of tomorrow.

Partners involved in the project:



Special acknowledgement:

