

# DIVERSITY IN STEM EDUCATION

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## STE(A)M WITH *SPHERO*

DESIGN AND CREATION OF ACTIVITIES WITH ROBOTS. THINKING ABOUT DIVERSITY

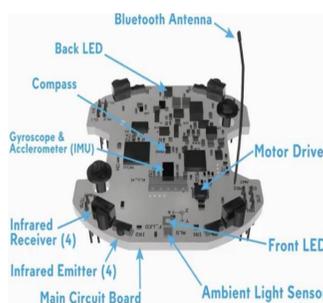
A series of educational proposals associated with robotics and different STE(A)M areas are collected using *Sphero* robots. They act as learning tools in a more attractive environment for students.

They have sensors that allow you to track kinematic variables. *Sphero Bolt* also floats in water, so you can work in the field of fluid dynamics. Here are some examples of its applicability.

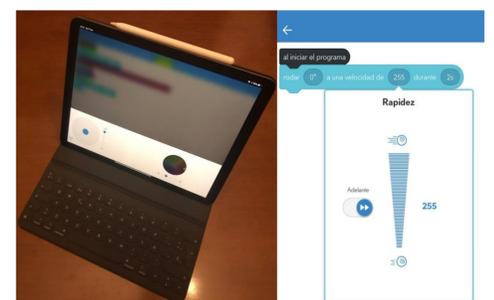
Finally, the work environment, *Sphero Edu*, is very intuitive. It can be programmed in different levels of complexity, from drawing to using JavaScript. All this with the possibility of sending written messages or sounds, allowing a more inclusive learning (sensory diversity, for example).



*Sphero robots can use: Spark, Bolt and Indi.*



*Some parts of the robot.*



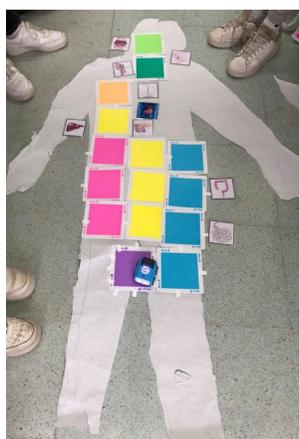
*Sphero Edu app (driving and programming).*



*Students working with Sphero Bolt in Physics class (Kinematics).*



*Video and program of one of the activities in the Physics class.*



*Activities in a Science class (Biology and Ecology) with Sphero Indi.*

Together these focus on areas as diverse as Physics, Biology or Social Sciences, and many others. First it can program challenges in relation to the different types of movement; secondly, it can create a circuit of the digestive system, it can also design and create a surface cleaning system in small ponds; and thirdly, help with road safety.

Although the activities are centered between 12 and 15 years old, the fact that they favor inclusive learning is also important, since robots can send written messages thanks to the small LED screen they have, as well as sounds via the mobile device.

**Conclusion:** both, teachers and students, can be stimulated with the use of robotics in the classroom. Through experience I know this has helped the students, even those with special needs, to achieve the objectives set, respecting the individual rhythms of each one.