GUIDE DOGS

STEM Project

Robot Guide Dog

Task overview

Aim:

To create an artificial 'guide dog' or guiding solution that uses programming, robotics or another form of technology

Objective:

- **Describe why Guide Dogs uses dogs as guides** and the basic standards of training required to become a guide dog
- **Evaluate previous research** into robotic guide dogs
- **Decide upon a tech solution** to guiding that meets the basic guiding requirements
- **Create an evaluation framework** to test the robot guide's efficiency considering its guiding abilities, the materials that would be used, its weight, portability and how easily it will move in the environment as well as how it would be held by the person its guiding
- **Design and make a device** that can demonstrate basic guiding abilities. A prototype could be made or a programme created and blueprints designed or virtual testing of a virtual device or wearable tech
- **Test and improve the device**, making note of the versions that are created
- **Consider how easily the device could be manufactured** to meet the needs of 5000 current guide dog owners and the potential to support the further 180,000 people with sight loss who rarely leave home alone
- **Analyse possible costs** and compare these to the costs of a guide dog (information can be found at **www.guidedogs.org.uk**)
- **Consider how these costs could be paid for.** Currently guide dogs covers all costs of breeding, training and life time costs of a guide dog.
- **Evaluate the device and the whole project** – what could be done differently? What went well?
- **Optional** – invite a guide dogs speaker to judge your devices. Email **speakers@guidedogs.org.uk**

Structuring your STEM challenge

1. **Researching the problem** – what does a guide dog do? How do dogs learn? Why are dogs the animals chosen to guide? What previous research and testing has been done?
2. **Create a check list** to help make decisions and evaluate strengths and weaknesses. What are the criteria you need your device to meet?
3. **Choosing the best solution**
4. **Designing the device** or making a plan
5. **Making the device** – this could include prototypes, computer programmes, virtual run throughs and testing
6. **Testing** – does it work well, how could it be improved? Do you want to make another version?
7. **Getting it out there** – how much would the device cost? How could you raise funds to pay for it? How could you let people know about it? How many would you need?
8. **Evaluating (using your check list)** – would the device work in the real world as well as a guide dog? What are its limitations? What could a dog do that the device couldn't?