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This project was carried out at *the University of Limerick and Tyndall National Institute* as part of the CONFIRM Summer Bursary Programme 2021.

### INTRODUCTION

The Tyndall Smart Glove is a wearable glove that uses sensors to track a person's hand movements to project a perfect replica onto a screen. This technology has the potential to be developed into an educational tool for surgeon simulations, sign language interpreter, game development, etc.

However, the two main barriers in realising these ideas was both the need for specialised coding training and the low uptake of STEAM subjects at Leaving Certificate, particularly with girls.

### AIM OF THIS PROJECT

The aim of this project is to:

1. Create code that could be used as building blocks for future developers, reducing their need for specialised coding training.
2. Promote STEAM as a career to young people, through engaging and interactive workshops that demonstrates its diverse careers and skills.

### METHODOLOGY

I carried out the following tasks:

- Researched the functionalities of the Tyndall Smart Glove.
- Contributed to refactoring of code, identification of model driven development (MDD) blocks, and modelling of a demo application with control and data flow using blueprint SIBs.
- Conducted literature review into emerging technologies and young people's attitudes towards them.
- Designed a Transition Year workshop composed of art & design, biology, physics, coding, robotics, business & ethics.



### OBJECTIVES

1. By the end of the Transition Year School Workshop, students should be able to:

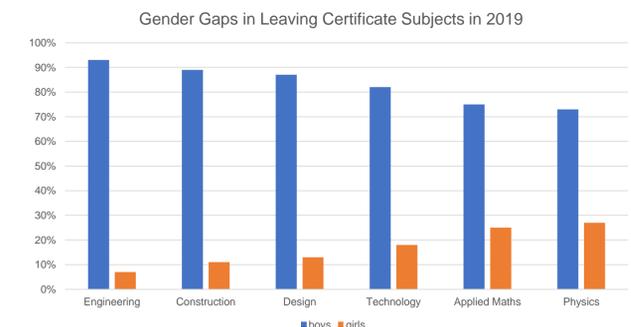
- Make an accurate model of the human hand using a variety of mediums (sketch, 3D modelling, CAD).
- List the components in a human hand, their functionalities, diseases that affect them and possible treatment.
- Design, build, and test functional circuits.
- Code a webpage using HTML, CSS, and JavaScript.
- Build obstacle courses for robots and be able to manipulate them to perform basic motor tasks.
- Discuss the ethical implications of designing technology (environmentally sustainability, inclusive to different users).
- Appreciate the wide variety of skills needed to develop advancing technology and its possible applications.

2. Create a software building blocks that would be used for further technical developments in more specialised fields.

### EVALUATION

The refactored code later went onto to be used in further development for medical training software which is still ongoing.

Pre and post workshop surveys found an increase in all students expressing an interest in studying at least one STEAM subject at Leaving Certificate, compared to those that had not completed the workshop.



### DESIRED IMPACT

The desired lasting impact is to bridge the gap in technological development and to inspire more young people to take up a career in STEAM.

### REFERENCES

- Careers Portal, Leaving Cert Grades Explorer.
- Tyndall Smart Glove.
- STEM Women
- Central Statistics Office

### ACKNOWLEDGEMENTS

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