**School of Computing**

**Year 4 Project Proposal Form**

## SECTION A

**Project Title:** AR-T

**Student Name:** Russell Brady

**Student ID:** 15534623

**Stream:** CASE

**Project Supervisor Name:** Monica Ward

## SECTION B

### General area covered by the project:

AR-T and is an Augmented Reality application for teaching Technical Graphics. It is an educational tool that can be used in teaching students the subject in a more practical and easy-to-understand way. Students can use the application in aiding them to understand / learn the basic concepts as well as helping them visualise and draw examples.

### Outline of the proposed project

- **Background:** Technical Graphics (TG) is one of the technology subjects offered at junior cycle and is then superseded by Design & Communication Graphics (DCG) at senior cycle. In TG you learn how to represent 2-D and 3-D objects on paper. You develop problem solving and creative thinking skills through the solution of graphical problems. I studied both TG and DCG during my time in secondary school and excelled at both subjects. However, during my time in school, I noticed that a large proportion of people struggled with the subject area. People found it difficult to visualise what it was they were meant to be drawing or what their projections of an object represented. The subject requires a great deal of special awareness to comprehend 3-D shapes and their respective projections from different angles and I wanted to find a way to make it easier for students to grasp the subject.

- **Achievements**: The aim of my app is to give students a greater understanding of what it is they are drawing and to aid them in understanding the basic concepts and principles of TG, as this is where I feel a lot of my fellow students fail. It is my hope that by showing students a visual representation of the object and by guiding them through their drawing, they will have a greater understanding of the subject.

- **Justification**: I hope that the app will be used as an educational tool in the classroom and at home for students. It is my aim that the app will be useful to both the students' development in the subject and to the teacher in monitoring their progress. There will

be lessons, examples and challenges to follow which should make the learning experience immersive.

**Programming language(s)**

Java will be used in creating the Android app, SQL in managing database and python for any scripts to be written.

**Programming tools / Tech stack**

I will use Android Studio to aid in development of the App. I will need to use an AR library to help in some of the AR related content. I will probably implement a Room Database alongside an Amazon Wed Server for any content I need to have available remotely.

**Learning Challenges**

This project will provide plenty of challenges with which I will have to overcome. Although I have some experience working in Android development, every app is different, and I am looking forward to the challenges that developing this app will bring.

Perhaps the biggest challenge will be in effectively implementing Augmented Reality in the app. This is an area with which I have no prior knowledge.

As well as this, having the UI interact effectively with the backend will be a challenge. It will be important that the app communicates seamlessly with the database and server.

**Hardware / software platform**

I will be developing for Android and will be targeting devices running Android 8 or higher.

**Special hardware / software requirements**

To develop an Augmented Reality application, I will need the use of an AR library in helping implement some of the project as well as an Android phone which has the capabilities to run AR software.