Watching shows on the discovery channel about new technologies was one of the highlights of my childhood. One show was called “How do they do it?” where engineers shed light on the genius minds behind simple modern day objects. The show explained the process common objects go through, ranging from simple objects like ketchup bottles to complex objects such as powerships. My favourite episode was the one on tractors in India because it was a revolutionary piece of technology that doubled productivity for farms and allowed farmers to provide food for one of the biggest nations in the world. What really stood out was the design because these budget tractors were still weatherproof, functional and aesthetic. This TV show inspired me to start engineering projects of my own. This aspiration to build something useful started off with simple projects to something much more meaningful.

One of my projects was the solar powered automatic animal feeder that will help feed stray animals in Oman. This project was very challenging yet constructive. I was very excited to create prototypes and help stray animals. I had to use the workshop at my school since I did not have the necessary equipment at home to build the case. It involved a lot of cutting wood and joining them together using screws. Although this stage was straightforward, I struggled a lot with using an Arduino Uno, which is the circuit that controls all the electrical components in the prototype. I eventually made it dispense dry food with the push of a button but a lot of the food got stuck due to the design. This is when I decided to use CAD since I had just been drawing designs on paper. But first, I had to know the requirements I had to meet. On top of the importance of designing and building, I understand that being able to convey my ideas is equally vital. In my attempt to practise this. I had a zoom meeting with a member of BAWABALI, a voluntary organisation that helps stray animals in Bali, where I presented my prototype. I practised a lot for this presentation since I only did it occasionally and the fact that it was on zoom made it more difficult. I focused on the flow of the presentation by adding relevant images and corresponding brief explanations of the different components of the prototype. I also prepared for the questions she might have so there was no doubt in her mind. Eventually, I was able to get my ideas across since she understood what the prototype could do. After receiving feedback, I changed the animal feeder to better suit their needs using CAD. After building it, I donated it to their main shelter where it is currently being used in the kennel for cats.

This skill of communication was developed during my internship at Gapura Liqua Solutions (GLS). I attended meetings with an expert and had the opportunity to ask about flocculation, which is a stage within the water treatment plant process. Previously, I had written a report about a water treatment plant in the US for a physics project in school and after asking the expert, I discovered that I was wrong about flocculation. I realise now that it is the process of adding chemicals known as coagulants to the water where unwanted particles join together to create ‘floc’ particles because in this state, they are easier to collect and remove from the water. It became more clear to me during the site visit where I went to their water treatment plant in PIK 2 in Jakarta. Not only did I see the pipe flocculators but I also saw the dissolved air flotation (DAF) tanks where bubbles are released from the bottom of the tank and they carry the floc particles up with them to the surface where they are collected. A lot of new discoveries were made and to summarise everything I learnt about the treatment plant, I wrote a report. I presented the report to the CEO, director and 2 other experts. For this presentation, I did not have a lot of time to prepare since I still had to finalise the report and I ended up doing it without a script. Despite this I was able to fully explain to them the extent to which I know their products and whether or not they could reach their final goal.

I would like to start working in the engineering industry to develop new technologies. My education will help me understand what actually happens in mechanical systems and why it works well. Using my knowledge, I hope to improve these systems to maximum efficiency to benefit people and make advancements in technology.