Technotes 2024 – Student Response

1. Can you give us a description of your product?

I have created a system that can change the ratio of torque and speed from an input to an output. Running on an Arduino Uno, the transmission can change gears automatically using a servo motor depending on the measured Revolutions Per Minute (RPM) of the system. The motor speed can be manually controlled by the operator to simulate the different scenarios that the transmission can be used in.

2. What inspired you to come up with it?

I have always had a passion for cars, in my Year 11 Systems Class I designed a RC car, however this year I wanted to design something that would not only expand my knowledge in the automotive industry but also try to innovate a product that we all use every day in our own lives. As I progressed through the design stages, the realisation of how complicated building something like an automatic transmission would be so my focus shifted towards creating something simple and yet still very functional.

3. Can you talk/write about your experiences while working on the SAT folio and product?

The folio for me was what I believe helped me to achieve success in Systems Engineering. Documenting everything I did along with the vast amounts of designs and research that was done before deciding on a final product was extremely important. Not only did it help with the quality of the product but also managing my time as I had clear set goals of when I wanted things to be done by. Although it was quite tedious and felt pointless at times, completing safety checks of things such as a screwdriver, it added a lot of depth into the folio and was time well spent. The time spent on the project itself was the most enjoyable, and having a product that (almost) worked was very satisfying. It helped me build real world skills that I have already used in my university degree and likely in my future career if I continue on this path.

4. What are your current and future plans?

Currently I am studying Engineering at Monash University and am looking at specialising in either mechanical or aerospace but I have a while before I need to make any final decisions. I am unsure what I am going to do in the future but hope to take some time off and travel. However, engineering seems to fit my interests and I believe I'll continue with that. I want to do something in the automotive industry, ideally more racing focused. A long-term dream of mine when I'm much more financially stable is to build a car from scratch, complete my own design and all by hand, but I need a few more years of experience under my belt before I attempt anything like that.

5. What advice do you have for current VCE students particularly those doing Units 3 and 4 Systems Engineering/Product Design & Technologies?

Starting early is the biggest piece of advice I can give. Being prepared the entire year makes the end so much less stressful and improves the quality of the work dramatically. Starting practice exams in term 1 even if you can’t complete the whole thing will be a huge help, and with systems a lot of it is common knowledge or easily accessible online so completing the exam early isn’t impossible. Along with the exams, starting the project early is a massive help. Start designing and aim to have a prototype or rough model as early as term 1. Even testing small subsystems within the larger system would help to create a much better product. The 3 terms given to complete the project is a huge amount of time, although it may not seem like it, that a lot of students waste and end up cramming everything up until the end and can’t complete what they intended to do. If you plan your year well, you will succeed.