

Technotes 2024 – Teacher Response

1. **What suggestions can you share with other teachers regarding how they can best support their students when working on the SAT**

Have students start on the coding and electrics, if possible, often they'll leave the coding till last which can be where the problems occur. This restricts the time for students to test and modify, crucial for criteria 6,7 and 8. Have the students build a prototype or quick model to show proof of concept, testing and modification can be done here, before placing the system in its final container, structure. An agreed timeline between students and the teacher to identify their progression throughout the terms also helps everyone achieve the desired outcomes.

2. **Has your teaching experience encouraged you to approach VCE differently?**

The ability to embrace projects outside my area of expertise and comfort zone is challenging but rewarding. Allowing students to choose projects that interest them creates an environment where the student can educate me and their peers to new concepts and ideas. One issue with this approach is finding the relevant information from reliable sources, explained in a student friendly way. I'm constantly updating my library with as many real-world examples as possible to show students. I also ask the students to send me links to websites that they've discovered and that they have found useful. So many websites claim to be able to teach coding in 15 minutes and when students then try to create their own, they can't solve it and end up stuck or asking me. So, I always tell students to code as early as possible, even expose your students to coding in Units 1 and 2. Also, if you can find the time, test out the website's tutorials yourself, I found one that when I tried to replicate it, overheated the mosfet transistor, which after additional research I discovered required a resistor in the gate section of the circuit.

3. **What hurdles did the student have to overcome when doing the SAT?**

Justin's major hurdles, in my opinion, were coding, integration of the sub-systems and running out of time to achieve an ambitious project. Justin informed me that he'd calculated that he'd spent 5 hours watching "YouTube" tutorials, so he could better understand how to code and modify generated code, to get the desired results from his Arduino uno. Also, when Justin had successfully built and tested his sub-systems, the integration of the sub-systems took longer than he'd anticipated.

4. **How do you think the experience of working on the SAT will help the student in the future?**

Systems Engineering offers students the opportunity to be creative in producing a product in a real-world environment. Justin developed numerous skills to achieve this, decision making, justifying his decisions, project management, setting milestones and meeting them, researching skills, coding, integration of sub-systems, CAD, prioritising work and planning. The concepts and principles within Systems Engineering as well as the structure of producing a folio and product align with some of the curriculum Justin will encounter at University in his Engineering degree.

I've been fortunate to have several past students enrolled in Engineering courses at different Universities within Victoria, give me feedback on where VCE Systems Engineering has helped them. They have all remarked on how fortunate they were to have studied Systems Engineering as this has been a great advantage to them over students who haven't.