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EE/RPPF

For use from May/November 2018

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Candidate personal code:

Extended essay - Reflections on planning and progress form

Candidate: This form is to be completed by the candidate during the course and completion of their EE. This document records reflections on your planning and progress, and the nature of your discussions with your supervisor. You must undertake three formal reflection sessions with your supervisor: The first formal reflection session should focus on your initial ideas and how you plan to undertake your research; the interim reflection session is once a significant amount of your research has been completed, and the final session will be in the form of a viva voce once you have completed and handed in your EE. This document acts as a record in supporting the authenticity of your work. The three reflections combined must amount to no more than 500 words.

The completion of this form is a mandatory requirement of the EE. It must be submitted together with the completed EE for assessment under Criterion E. As per the 'Protocols for completing and submitting the Reflections on planning and progress form' section of the EE guide, a mark of 0 will be awarded by the examiner for criterion E if the RPPF is blank or the comments are written in a language other than that of the accompanying essay.

Supervisor: You must have three reflection sessions with each candidate, one early on in the process, an interim meeting and then the final viva voce. Other check-in sessions are permitted but do not need to be recorded on this sheet. After each reflection session candidates must record their reflections and as the supervisor you must indicate the month that the reflection session took place, the candidate's year of DP study at that time and initial this form.

First reflection session

Candidate comments:

When it came to designing the experiment I first had to choose the variables. I chose water fill amount and altitude because it had real world implications to water rocket competitions, where altitude is the goal. My first step was figuring out how to measure altitude, at first, I planned on tying a string to the rocket and letting it unwind as it gained altitude. I would then measure how much of the string was off the spool to determine the maximum altitude. This ended up being imprecise and time consuming for the amount of trials I wanted to run. Instead I purchased an altimeter which was accurately able to record the altitude of each trial. This made the process much quicker and allowed me to take more trials in a smaller amount of time. I built my launcher using PVC piping, a tire valve, and a foot pump. The materials I used were cheap and able to withstand high pressures. The foot pump allowed me to most efficiently transfer kinetic energy into potential energy.

Month:

DP year (1 or 2):

Supervisor initials:



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Interim reflection

Candidate comments:

After collecting my data, I was able to graph a water fill amount vs maximum altitude graph. The data ended up fitting into an almost perfect quadratic relation. I found the vertex and that gave me the ideal water fill amount. After answering my research question, I was not sure where to go. For one, I did not feel like I had used enough mathematics. Before worrying about that I decided to compare my experimental results to a theoretical simulation, which would give me the data in an ideal run. Unsurprisingly my experimental results differed, but not by a large amount, allowing me to deduce that my experimental process was in fact well done. I then wanted to model it mathematically and compare that model to my experimental and theoretical models. This however proved to be a near impossible task for me at the time as it required complex calculus far ahead of my current knowledge and ability to learn at that time. This was due to the changing mass of the rocket throughout its flight.

Month:

DP year (1 or 2):

Supervisor initials:

Final reflection - Viva voce

Candidate comments:

Overall, I think my experiment was well done. I got precise and accurate data which was proven by the small spread of data, almost perfect quadratic relationship, and small variation from the theoretical model. The mathematics involved with this topic were too difficult for my skill level and I should have done more research into that before deciding on this topic. Despite this I feel I was able to work around this by explaining the flight of the rocket through physics language in a detailed and sophisticated manner. The mathematics definitely discouraged me a lot but once I realized there were other ways to communicate my ideas effectively I was able to persevere and finish the essay. The experience has taught me a lot about how to design experiments, manage my time, persevere through challenges, and write academically. These skills are priceless, and I am thankful for this experience.

Month:

DP year (1 or 2):

Supervisor initials:

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Supervisor comments:

Supervisor: By submitting this candidate work for assessment, you are taking responsibility for its authenticity. No piece of candidate work should be uploaded/submitted to the e-Coursework system if its authenticity is in doubt or if contradictory comments are added to this form. If your text in the box below raises any doubt on the authenticity of the work, this component will not be assessed.

The student started the process really well. He approached the design of what could have been quite a complicated experiment well. He put considerable thought into his variables, and considerable thought into how to approach uncertainty. He built the contraption himself after researching bottle rockets for quite a while. And then he hit a wall. He got overwhelmed by the fact that to fully process his data he would need calculus (which he had not encountered at that point in math). This caused a major block for him. I feel that he could have worked harder to discuss the actual fundamental physics of the bottle rocket (and how mass/pressure work together to make a rocket work). There are a number of good papers that he did not find on the subject. He put a lot of discussion into "weather cocking" and I'm not sure that this was a direction I would have gone in, but he did find references to back up his claim. He learned a lot from the process of the EE, and I saw him grow throughout the process.



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