

# Education Fellowship Project Description

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## Concept Summary

My concept for the fellowship is to develop an open and immersive digital textbook that makes use of the latest technology for embedding video and interactivity within the epub format for a digital textbook. This includes embedded teaching videos, virtual experiments with VR capabilities (filming with 360 camera to allow student to control what they see), and interactive problems. The main aim of this project is to increase the engagement for learners outside of the classroom by providing a learning resource that encourages the student to explore and interact with central concepts within a course.

## Application Target

This project is envisioned to be applied to a 2<sup>nd</sup> year bachelor course within the Aerospace Engineering Faculty known as *Aircraft Structural Analysis and Design*. This course is a difficult course that students have been known to struggle in. The high level of mathematics and lengthy nature of problems that are solved to demonstrate concepts places a large restriction on the in-class teaching environment in terms of the timing and flexibility of teaching methods. This is particularly a problem for the *design* aspect of the course which requires more interaction and flexibility for the teacher to convey the subtle nuances of decision making and compromise necessary in design.

By encompassing all of the theory in an immersive and interactive textbook, the teacher will be more free to devote class time to design oriented classroom activities that allow the context of a problem to be set, and the ability of the student to rely on the digital textbook as a resource to learn the necessary concepts to approach that problem. Indeed, this is more of a reflection of how engineering in practice is carried out.

Although the initial target application for this project is this bachelor course, it is envisioned that the resource will become extremely valuable for the Design Synthesis Exercise within the Aerospace Engineering bachelor and could become a model for creating other digital textbooks and readers which facilitate other design and problem-based courses and projects, such as the stream of project-based learning courses within the Aerospace bachelor programme.

## Experience of the Candidate

The project will make use of my experience in making blended videos and online courses, my recent experience in designing virtual experiments with the ASM MOOC, and my enthusiasm to create more space for critical thinking and design within the educational programme.