Teaching Excellence Case Study

Air crash investigation: A problem-based learning approach to develop study and employability skills

Practitioner: Caroline Lambert, School of Mechanical, Aerospace and Automotive Engineering, Faculty of Engineering, Environment and Computing cex455@coventry.ac.uk

Course: BEng Aerospace Engineering/BSc Aviation Management

Student Level: Level 4

LINKS TO EDUCATION STRATEGY PILLARS

- Embedded employability
- Research inspired teaching
- Creativity and enterprise

AIMS

Students embarking on aerospace-related courses need to be able to **solve real-world problems,** using their own initiative and working out how to ask the right questions. They also need to get used to **working in groups** from an early stage. Developing all of these skills is crucial for learners to succeed in their studies, as well as in the aviation **industry.** The course team wanted to find a way to enable students to engage with these ways of working from day one.

ACTIONS

The course team devised a **crash investigation exercise**, in which students work in groups to understand why an air crash has taken place, based on the data they are provided with. The exercise **unfolds in real time,** with students gaining access to data incrementally over a period of weeks.

Students are initially issued with a press release with key details of the incident. They are then asked to consider **what other data** they need to piece together the cause of the accident. Students might then go on to request material such as eyewitness accounts, a map of airport, the aircraft's engineering checklist, weather reports and so on. It is up to them to decide what is needed.

Students are also asked to **undertake specific tasks** (e.g. update the press release; provide a video for a press conference, as if they were employees of the airline) as part of the exercise.

IMPACT

By undertaking this exercise at the start of their course, students become **better prepared for university study** (e.g. undertaking group work), as well as learning about the aviation industry and its procedures. The exercise has been successfully implemented with several cohorts of students, and has provided the basis for research outputs by the course team. Moreover, **employers very much value** the practical insights which graduates of these courses gain during their studies at Coventry, and problem-based learning exercises such as this are invaluable in facilitating these.

STUDENT FEEDBACK

- "[It] was a great experience as it removed the uncomfortable and nervous first introductions to a group of strangers while relating it to a real life situation"

- "I saw the benefits of working with other students more than I have before. […] Helping others understand the work inevitably gives you a deeper understanding of the content"

Image: @ninjason, *unsplash.com*

TOP TIPS

- It was **initially labour intensive** for staff to set up the exercise; however, this has certainly **paid off** in the long run, as the exercise has been replicated numerous times.

- It is important for staff to **provide some structure** to the exercise, and to **anticipate students' needs** (e.g. preparing in advance the types of material that they would be likely to request).

- On the other hand, the course team also need to be able **to respond to each student group's** approach to the task (e.g. if they requested something which hadn't been asked for by any previous groups, staff would need to respond accordingly).

- Once developed, **problem-based learning** scenarios such as this can be very **versatile.** They can run over different timeframes (e.g the current one initially ran over six weeks, but now runs over three), and can also be used as part of students' assessment if appropriate.