Drones to the Rescue!

Remote and blended teaching of practical Aerospace Engineering Design

Ben Parslew • Khris Kabbabe
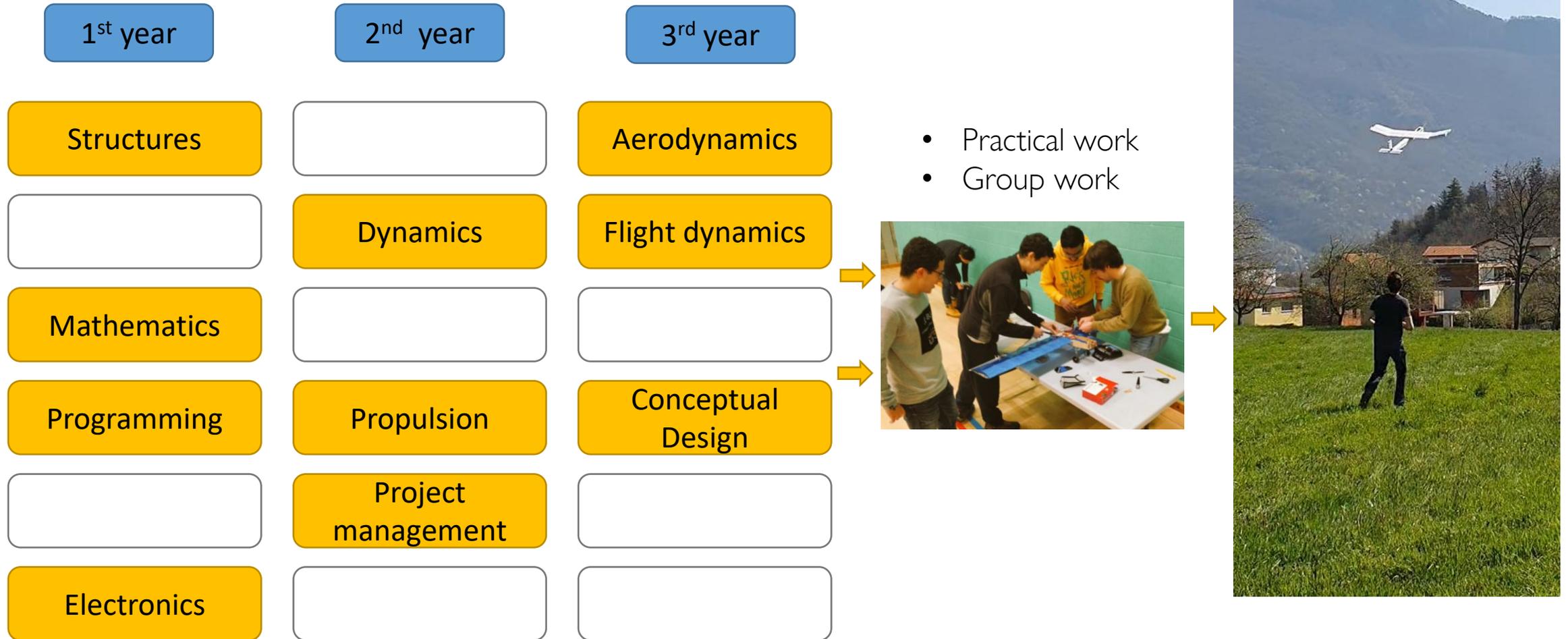
Practical work

Group work

4th year Aerospace design is a capstone project

1st year	2nd year	3rd year
Structures		Aerodynamics
	Dynamics	Flight dynamics
Mathematics		
Programming	Propulsion	Conceptual Design
	Project management	
Electronics		

- Practical work
- Group work

4th year Aerospace design is a capstone project

2019-2020
Smart City Drone

2020-2021
Covid Supplies Delivery
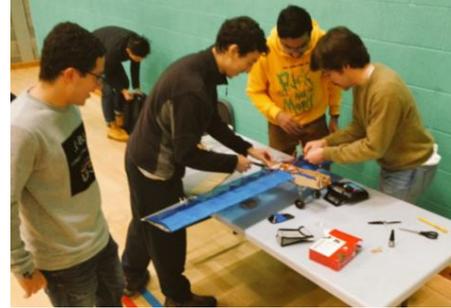
- Practical work
- Group work
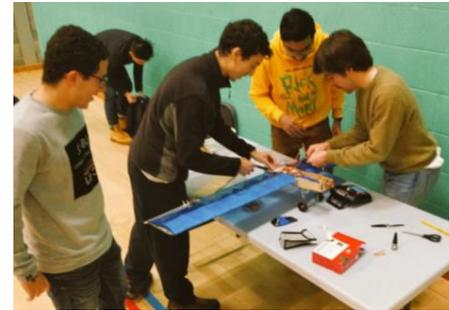
This year we tried something different

- Practical work
- Group work
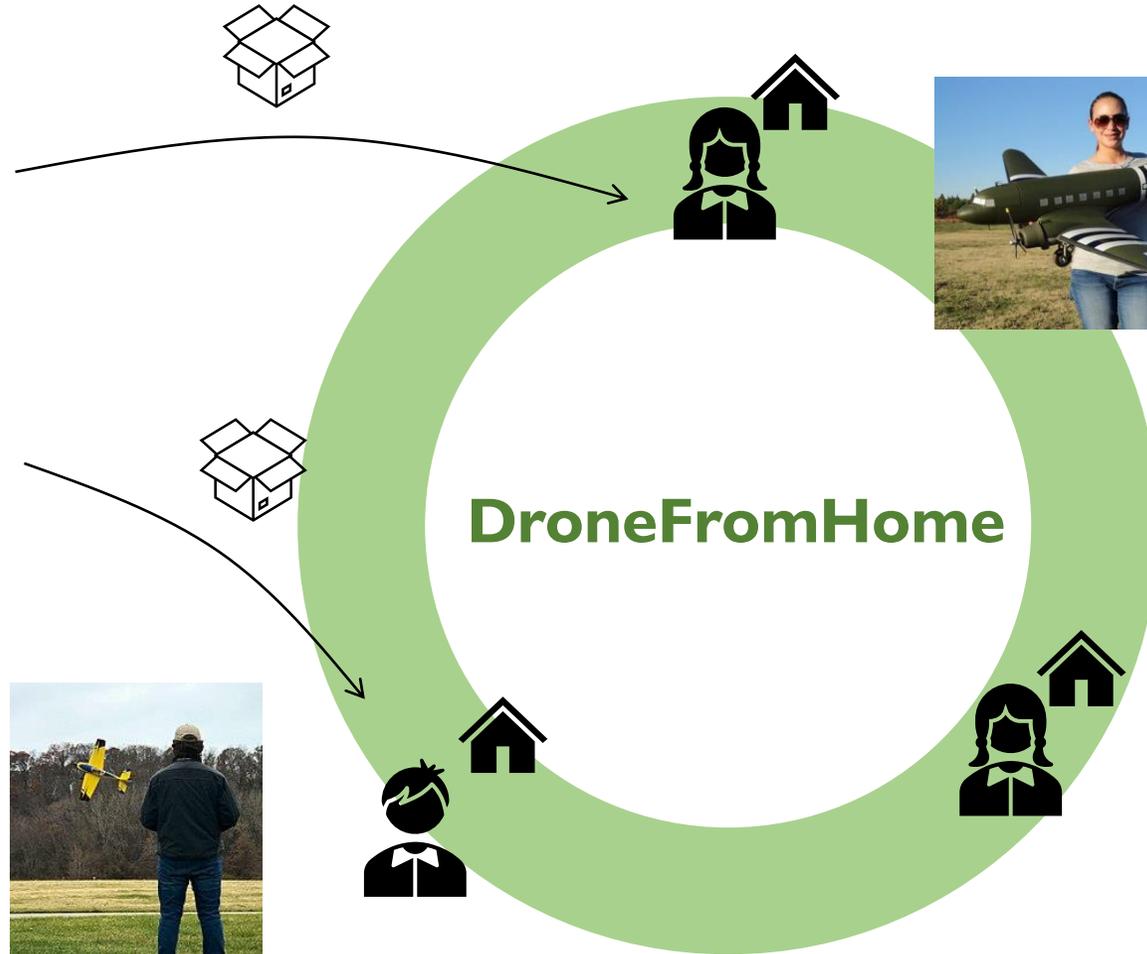
This year we tried something different

DroneFromHome

We face a range of yearly challenges

1. It is never as joyful as we imagine it should be

2. Not everybody in the groups gets involved

3. It takes a lot of staff time. Is it worth the pain?

We need to better understand student engagement in group and practical engineering
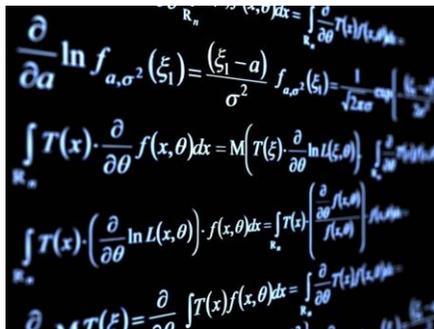
Group work anxiety

Fear of practical

Laziness

A lack of relevant experience

More important things to be doing

Our course just isn't that interesting

Blended-learning and practical PBL

The good, the bad, and the ugly

Blended-learning and practical PBL – The Ugly

Blended-learning and practical PBL – The Ugly

From: fse safety <fse.safety@manchester.ac.uk>
Sent: 10 March 2021 13:47
To: Khristoph
<john.warren
<ben.parslew
Subject: RE:

Hi Khris,

Suggested text additions for the RA blue. Please feel free to amend to suit.

Insurance -
Student has confirmed that they have their own home insurance and content insurance. Student understands the University is not liable for these.

Personal risk –

Please can you confirm if anyone in the School of Engineering is reviewing the new insurance policy in relation to the new methods of flexible teaching and learning (incorporating remote study options) and the new workspaces that we will be occupying in MECD?

Regards

- what

Thank you for the update.

Although all
Just to clarify, as it stands, if anything happens at a student's home while they carry out this activity, the University insurance may not cover. That includes personal injury to the student, personal

Hi Tim,

Thank you for raising the mental health concerns. I know MACE is driving a lot of discussions around this at the moment, which is fantastic. There are University working groups with both HR and Students Experience, so students' mental health will be captured.

In terms of insurance and liability, it is usually easier to establish the causes and burden of guilt in cases of physical injuries and property damage, compared to mental health injuries. The need for robust safety measures to prevent physical injuries and property damage have also been recognised for much longer.

Therefore, although all these risks are equally important, there is currently a higher expectation in how we mitigate physical injuries and property damage, because we've had more experience in it. I'm sure in time, the standards in managing mental health will be raised, just like it did previously with physical health.

Hope this helps. Thank you.

Blended-learning and practical PBL – The Ugly

- It is clear that a lot of effort has gone into the transition to blended-learning.

- At university level, our current processes and facilities, are not only not ready for this, but causes a significant risk to the teaching approach they have mandated.

- We are doing our job in spite of university processes, this should not be the case.

Blended-learning and practical PBL – The Bad

Blended-learning and practical PBL – The Bad

- Student interaction will never be guarantee.

- I learned that Zoom session should be only about interaction.

  - Best teams had most members present and with cameras and/or microphones always.

  - In the future, my briefing sessions will be videos (except for the very first one - Legislation).

  - Having these timetabled session was well received by students and led to a reduction in complains about team members not engaging (only 2/12 this year), last year I had at least 5/12 groups.

    - Buddycheck sounds like a good thing to add.

- Where tools provided were not optimal (blackboard) students were using their own. This is great as it encourages them to try new things out. However, it makes it harder for us to monitor and support. Especially when problems arises.

Blended-learning and practical PBL – The Good

Blended-learning and practical PBL – The Good

Blended-learning and practical PBL – The Good

- Best groups took advantages of not being co-located.

  - Bad weather in Manchester, Switzerland is good.

- Best groups ended up developing further skills than normal.

  - Having the ability to include more (optional) material within the course helps keep engagement high.

- Best groups took responsibility of their own safety and learning, and even taken an interest in the learning of others.

  - This year our Piazza space is mostly self-supported.

- Operating safety cases developed by Engineers not students. (60s to 70%, previous years 50%-60%)

Blended-learning and practical PBL

- Practical projects remains and important part of the course. It is challenging for staff, but the reward is very high for both staff and students involved.

- University needs to evolve to capture our requirements for blended-learning.

- We need to make sure that things we tried and worked this year can be supported in the future.

- Personally, Ben and me enjoy teaching this unit and always look forward to it. We have to! Otherwise, how are we going to convince students that this is a unit worth spending time on?

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