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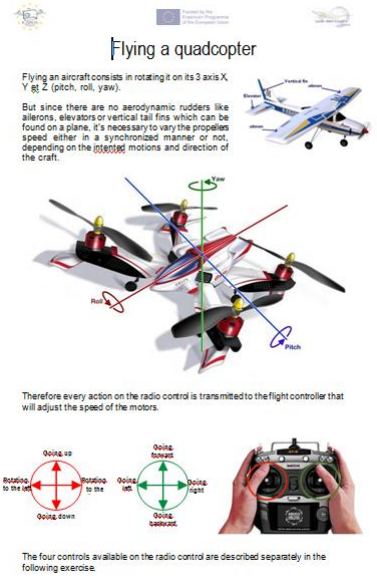
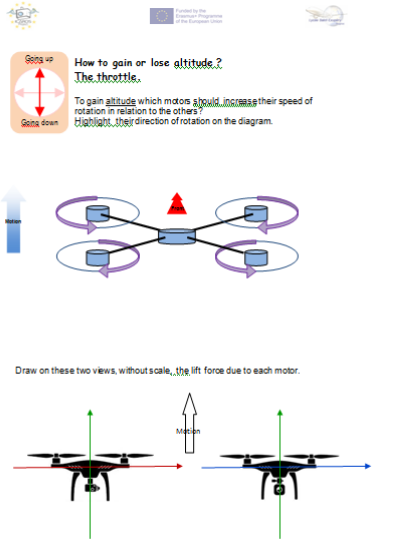
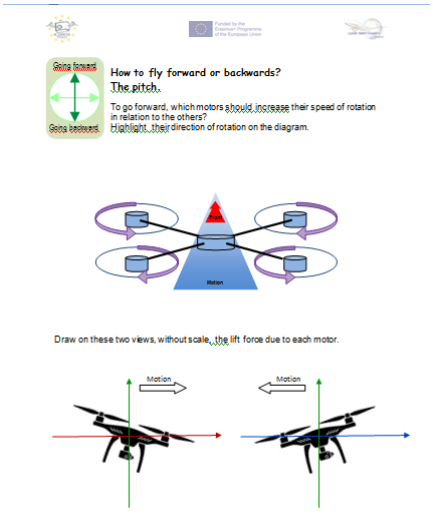
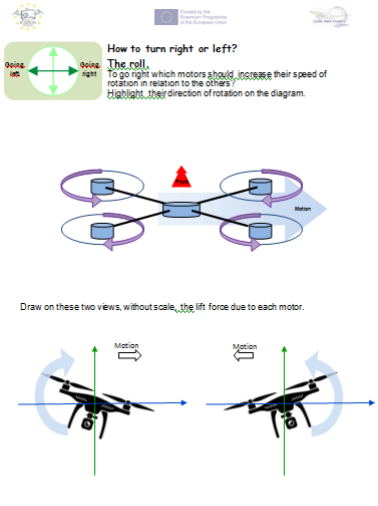
Project ICAROS **Report Code**	***FR-STEX-2016-DEC-07***
Title	*Flight controls*
Start/End Date	*15-DEC2016/ 16-DEC-2016*
Coordinator name and email	*Marc Garrigou – marc.garrigou@ac-toulouse.fr*
Name of teachers	*Patrice SUIN – patrice.suin@ac-toulouse.fr*
Number and age of students	*24 students / 16-18 years old*
Description of activities	*During this session, our students in first year of MEI (industrial equipments maintenance) discover flight controls.* *The aim is to understand how every action on the radio control permits to adjust the speed of the motors.* *They describe separately what motors should increase their speed of rotation in relation to the others in the different intented motions:* ➢ *to gain or lose altitude, acting on the throttle* ➢ *to fly forward or backwards , acting on the pitch* ➢ *to turn right or left, acting on the roll.* ➢ *to rotate to the right or the left, acting on the yaw.* *Then they draw in every cases, without scale, the lift force due to each motor.*
Learning outcomes	*During this teaching sequence the exam skills practised by the students are :* • *Appropriating* • *Analysing* • *Carrying out (Implementing)* • *Communicating* *<u>The different abilities associated to the degree framework are :</u>* *HS1.1 listing the mechanical actions applied on a solid.* *Drawing and characterizing a mechanical action by a force.* *Experimentally checking the equilibrium condition of the solid submitted to several forces.* *HS1.3* Using the torque formula. *listing the torques applied on a solid .*

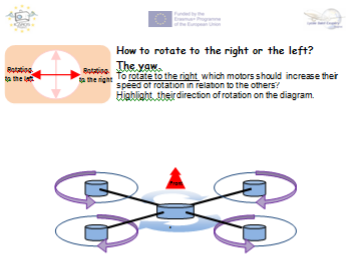
Photos or other relevant material

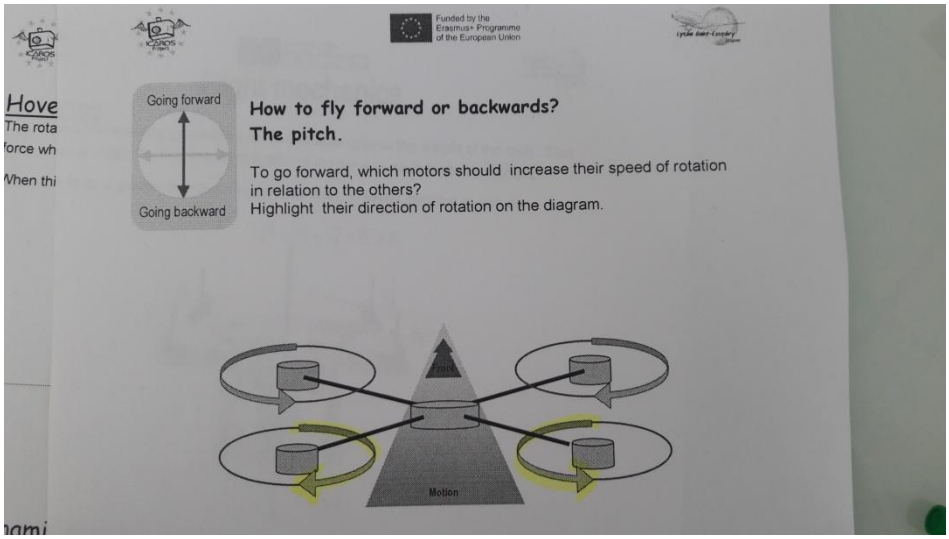









How to rotate to the right or the left?
The yaw.
To rotate to the right which motors should increase their speed of rotation in relation to the others?
Highlight their direction of rotation on the diagram.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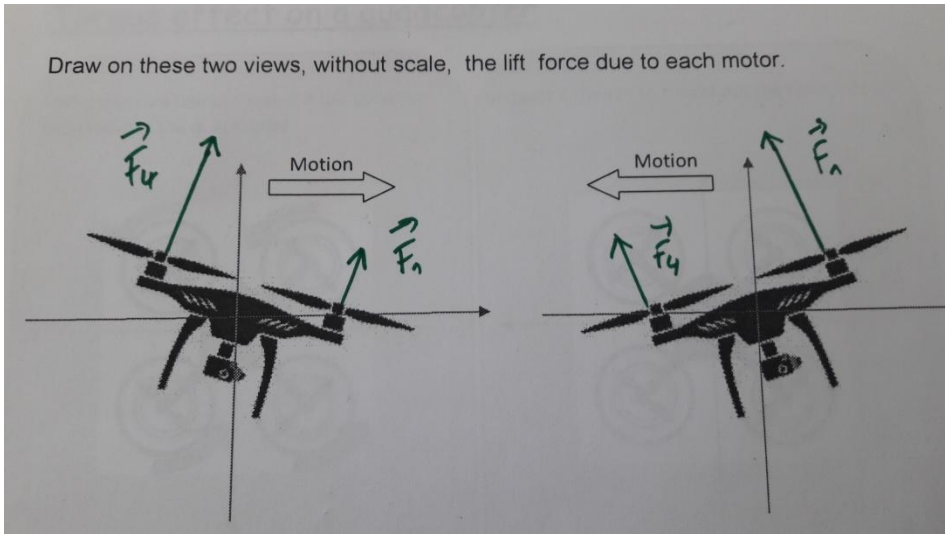
Going forward
Going backward
How to fly forward or backwards?
The pitch.
To go forward, which motors should increase their speed of rotation
in relation to the others?
Highlight their direction of rotation on the diagram.
Motion


Draw on these two views, without scale, the lift force due to each motor.
Motion
Motion

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