Project ICAROS Report Code	FR-STEX-2017-03
Title	*Start up a System (Unmanned Aircraft) in accordance with the rules of use and safety*
Start/End Date	*Started 05/12-2016 – Ended 31/03-2017*
Coordinator name and email	*Marc Garrigou – marc.garrigou @ac-toulouse.fr*
Name of teachers	*Wolf Nicolas – nwolf @ac-toulouse.fr*
Number and age of students	*2 Classes: 46 students, 17 to 19 y.o.*
Description of activities	Main objective in the context of vocational activities: The aim is to make students aware of all the knowledge and actions to be done before the real use of any system whatsoever. A5: Communicating with users and within a team: Dialogue in a group, reporting information. Success Criteria: - The dialogue makes it possible to choose a solution that is clear and accepted by all. - Clear speeches, exploitable reports, instructions are strict - The actors appropriate information. A4: Integrate a new system: Start up a quadcopter by ensuring compliance with the rules of use and safety. Identify the risks and define the preventive measures throughout the maneuvers. Success Criteria: - Environmental constraints are taken into account - Risk analysis done, safety is guaranteed - The contents are mastered: Theoretical test remote pilot Through these activities the students will develop some skills of their training reference: - CP1.6: To start up a system in compliance with the procedures. - CP1.7: Identify the risks and define the preventive measures to be implemented. - CP4.1: Receiving and transmitting information This sequence will take place in several steps and will require some knowledge before on the flight behavior of a drone (flight mechanics and flight control)

Step 1: Discovery of the legislation (general framework and aeromodelling).

Duration: 3h00   Working in groups of 4 to 5 students

In order to better integrate using rules of this new machine, students will have to create pictograms from a condensed version of the legislation in France. Be as clear as possible in their realization. The different groups will present their work to the rest of the class.

A poster with all the pictograms will be designed.

Step 2: Risk analysis

Duration: 1h30   Working in groups of 4 to 5 students

After taking knowledge of the rules. Depending on pre-defined flight situations (work situation), students will have to carry out a risk analysis using the PAD (Principle of Appearance of Damage); Tool seen in the course of PSE (prevention Health and Environment) and exploited for vocational activities in workshop.

Sharing of the different analytical works.

Step 3: Implementation of the work situation (flight test)

Duration: 1h00   All students are actors in the workshop

At the end of the risk analysis: students will have to prepare their intervention by implementing preventive measure previously defined in order to perform the test flight safely.
These same steps are repeated within the framework of legislation for professional activities.

Step 4: Remote pilot theoretical test

Duration: 0h30   All students

Students take their theoretical remote pilot exam. This will demonstrate their knowledge of the rules for the use of the quacopter.

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| **Learning outcomes** | Raising students' awareness of safety issues in their work and in using new equipment is a major issue for "health" (avoiding accidents).

This sequence to generate a good dynamic to work about security, often found tedious and boring, annoying although very important.

Use drone with the final objective: to make a test flight attracted a lot of interest among the students.

They have very well integrated risk analysis and the importance of prevention.

All students participated.

This activity is transposable to all the students of the section and even other professional pathways or the security approach is a necessity. |
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| **Photos or other relevant material** | Step 1: Discovery of the legislation

Internet links :
https://www.youtube.com/watch?v=t2F1rNtfk08
http://www.developpement-durable.gouv.fr/Modeles-reduits-et-drones-de.html
https://www.geoportail.gouv.fr/carte

Documentation : French regulation

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Creating of sign in relation with aeromodeling regulation

Exposed on regulation
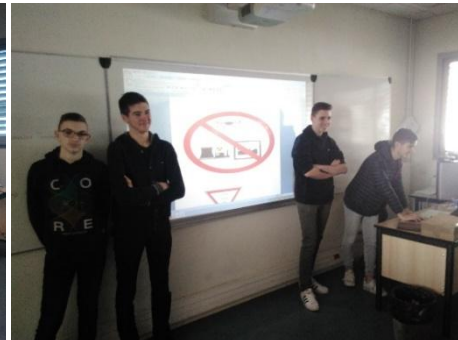
Step 2: Risk analysis

Document : Professional risk report

Make risk list

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Internet Map : Geographical situation of the school and flight restriction zones
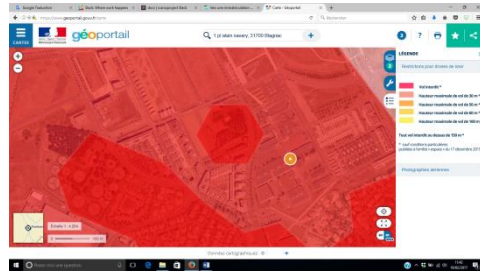
Step 3: Implementation of the work situation (flight test)
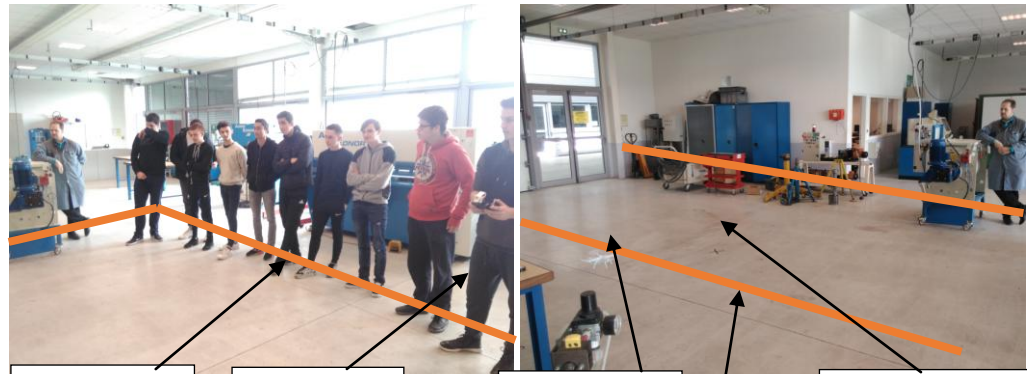
Flight and Security Limits

Remote pilot

Quadcopter

Take off and landing point

Flight and Security Limits

Step 4: Remote pilot theoretical test

Remote pilot theorical test