Co-funded by the
Erasmus+ Programme
of the European Union

2015-1-ES01-KA202-015925

IMPACT of DroneTeam

COORDINATORS' REPORT

Co-funded by the Erasmus+ Programme of the European Union

DRONE TEAM

2015-1-ES01-KA202-015925

Call: 2015 - KA2-Cooperation for Innovation and the Exchange of Good Practices Strategic Partnerships for vocational education and training

Project Title: **Making and designing a toy drone through multidisciplinary collaborative work**

Project Acronym DroneTeam

Project Start Date 01-09-2015

Project Total Duration: 36 Months

Project End Date 01-09-2018

IES La Foia · Tehnička škola Sisak · ZS10 · aiju Technological Institute for children's products & leisure

Priorities according to the objectives of our project.

1. Professional development of VET teachers and trainers *from different areas of knowledge*
2. Development of high quality work-based VET **supported by an expert technology centre**
3. Developing basic and transversal skills using innovative methods

Please comment on your choice of priorities.

The project will meet VET teachers and students from different areas of knowledge and will bring a more global vision in order to professionally develop these stakeholders. It is intended to work on innovative practices in four VET Schools, adding **synergies** and supported by an expert technology centre in order to generate high-quality Open Educational Resources. It is also intended that teachers of different Schools can develop educational materials that cannot develop without the collaboration of teachers from other disciplines and experts. Moreover, this project will bring a high added value since we will follow the same steps needed in the development of a real and innovative product. Students will know and will analyse the same concepts used in business. Therefore this will be **a close project to the real world of work.** That is why the aim is **to cover the current demand of dynamic creative and enterprising professionals. Students can develop basic and transversal skills** in multidisciplinary teams. The creation of theses multidisciplinary teams of students will also allow peer learning. That is, a Spanish student will have worked on the plastic structure of the drone, the Polish student will have worked on the software and programming device control. The Slovenian student will provide its expertise in electronics and wind tunnel evaluation. The Croatian student will contribute the development of several parts using Design and 3D Printing. They all together in a team can learn from their peer formed in different disciplines.

Impact what is the expected impact on the participants, participating organisations, target groups and other relevant stakeholders?

The project Involves a minimum of one class from each of four VET Schools. The average for each School is 25 students. Teachers involved also put at least 3 per school, totaling a minimum of 12 teachers and 6 ALU's researchers.

The expected impact on the target groups is:

1- the impact expected **on students** is an increase in motivation and in knowledge, personal key educational competences and skills in innovation and empreneteurship. They may also complement their areas of expertise with other disciplines and have a comprehensive and realistic view of product development and work in multidisciplinary teams.

2- The impact expected **on teachers** is improve their teaching function, improving their skills, learning from colleagues in other schools, adding synergies in developing high quality educational materials.

3- For **participating VET Schools**, the objective is to form students with high European concept and better job prospects. as modern school with ability to work in European projects and develop quality educational materials. All this will have to raise the prestige of participating schools and should attract new students.

IES LA FOIA - SPAIN

Impact on our school

The general balance of the Drone Team project is very positive. It has had a great impact in the school, on teachers and on students. It has helped to open our minds.

It has improved our linguistic competence in English and it has given tools to promote initiative and empreneurship, and also the problem solving skill, which is necessary nowadays to enter the labour market.

On the other hand, the work done over these last three years has improved the training of teachers. It has increased motivation among teachers and students. We all have increased our competence of learning to learn. The collaborative learning has been not only with the other European partners, but also within our school, inside the machining department and between English and Moulding department.

The high collaboration with AIJU, who was assessing teachers and students throughout the project was excellent and it has brought quality and rigour to the development of the project.

VET students from our school have now more future possibilities and they are closer to the labour market, since companies require learning ability, versatility and skills to work in team.

In Ibi and in Valencian Community

IES La Foia

In Multipliers Events scheduled, besides involving teachers and students from other schools from Ibi and the Valencian Region, it also involved parents, municipality authorities, stakeholders, entrepreneurs, etc

By showing the results of this project, we showed how attractive STEM careers are, since the drone implies different disciplines: 3D printing, electronics, programming, CNC, etc

We disseminated results and the development of the project on :

- Project Website within our school website: http://www.ieslafoia.com/english/drone-team-en/
- Social media channels:
- Facebook: IESLaFoiaIbi (1004 followers)
- Youtube Twitter: IESLaFoiaIbi
- Local/regional press: several articles of each meeting and multiplier event
- Local radio: RadioIbi
- Alcoy regional TV: reports on 2 occasions, at the beginning of the project and at the end.
- Municipality authorities. Teachers' forums.
- School's magazine.
- Events/fairs. Several internal events at school for all students (480) and for Primary students (100)
- ICT and Education Congress in Valencia (Polytechnic University of Valencia in Gandía), 5th/6th October 2018

Sustainability

IES La Foia

The OER are included in the curricula of moulding and Technical English for Vocational training on Moulding of Metals and Polymers.

Articles in the school's magazines

Encouraging the new teachers every school year to enrol the MOOC courses on our e-learning platform.

AIJU - SPAIN

aiju Instituto Tecnológico de producto infantil y ocio

Impact

For AIJU, this project represents the opportunity to contribute and help in training of future professionals required by toy sector companies. This is our main mission: support and improve the toy sector, and this project is a clear way to do this. - For other stakeholders, the impact is to access all OER and used it in their convenience. Six months before the end of the project, a MOOC course and will be made available to the Educational Community so they can learn about developments and the process followed in the creation of a drone. This totally free course will enable the stakeholder customize and set up his own drone according to the indications of the course.

Internally, this project has been a challenge that we have been able to solve. Three years ago it was more complicated to access drone components. We have looked for the option of keeping most of the components from the basic drone to the advanced drone. We have explored other options and created additional developments related to DroneTeam project: Holograms, VR and AR.

Our satisfaction for Having given support to the rest of the partners. We have perfected the use of scribing videos. + of 12 people have been involved in the development of this project by AIJU.

ŠC Krško-Sevnica - SLOVENIA

Impact at school

Every school teacher and student is aware that drone sector as important sector in the future economy and also the field of employment opportunities for our students in the near future. Project was presented to them on around 50 dissemination and communication events and 2 multiplier events. Everybody was informed about project through school and project webpage, Facebook profile and also various articles and TV news. Lot of them also entered our MOOC courses and learned about drones. Lot of our students were part of the project and some also travelled to project meetings. They improved their knowledge about electronics, microcontrollers, 3D printing, drones and also linguistic skills.

Every student and teacher is also familiar with regulations about flying drones in Slovenia.
Our school also bought materials to equip physical laboratory and build wind-tunnel for testing drones. Sensors and camera were used for this purpose and will be used on other projects in future. The laboratory was so famous that even president of Republic of Slovenia Mr. Borut Pahor came to see it.

MOOC courses as an output will be part of open curricula in school programs.

Impact in region Posavje

With dissemination activities, 2 multiplier events and articles in local newspaper, website, Facebook page and local TV news project was presented to local region inhabitants. We presented our project on several local fairs such as Megadom technical fair 2017, Megadom technical fair 2018 , Tržnica poklicev (Market of labour), Presentation of project on 40th anniversary of Regional chamber of Craft and Small business of Sevnica. We were also part of technical fair Tehnogenij (2016, 2017) which is the biggest technical event for promotion technical skills in region and also in the Slovenia.

We also organized Arduino day 2017 with presentations and workshops on Arduino and Ardupilot with lots of participants.
Two holidays workshops for students and primary school students were organized In Krško and Brežice.
Project was presented to all 8th and 9th grade pupils of primary schools in region on technical days at our school where they could learn how to build drone and how to operate with it. They could also learn to fly on the simulator. Presentations were also made at INFO – days when future students come with their parents to choose technical education. Our school was raising enrolment to our technical programs every year of the project.
There was also few articles in local newspaper Posavski obzornik, which is most read newspaper in area (58000 copies) and it is free for all inhabitants in region Posavje.

Articles in national newspapers Slovenske novice and Dnevnik and Nedeljski dnevnik (three most read newspapers in the Slovenia all together most than 100 000 sold copies) disseminate our project all around Slovenia.

Presentations and workshops at the national competition of electronics and computer schools was also very important, because every mentor and best students from every school in Slovenia were familiar with our project.
There was also great dissemination in the national TV show Vem!, which is one of the most widely seen TV show in Slovenia – it has 8.4% ratings which mean around 160 000 spectators per every premiere show and also lots of replays.

International impact

Our project was part of presentations of our school on several international events. Fairs MOS 2017, SPECULUM ARTIUM 2016 and IFAM 2018 were big international events with more than 150 000 visitors.

We also presented Drone team project to all guests at our school from other projects such as teachers and students from Croatia, Portugal, France, Italy, Estonia, Germany, Czech republic, Turkey…even a guest student from Niger.

ZS10 Zabrze - POLAND

The impact on the school

Students and teachers are totally aware that drones sector is becoming one of the fastest developing parts of the industry and the area of future possible career for our graduates. The project was presented on many dissemination event organised by DroneTeam group and on two multiplier events.

Students were using our MOOC courses and were learning about drones. A lot of them also took part in various project activities, and some were travelling for the project meetings.

MOOC courses as a result are going to be a part of open curriculums in school education.

Skills that students have acquired:

Team work skills, group management and responsibility sharing in a group according to each member of the group skills and interests, working in a programme supporting the team work – trello. That skill allows better students' performance during the lessons, improves the students' professional career chances.

- acquiring modern technologies – introducing students to the advanced technologies.

- interdisciplinary co-relation – students have improved their knowledge in electronics, electical science, microcontrollers, 3D print, drones.They have also improved their language skills. Drone Team project was also an opportunity to use their knowledge of Maths, Science or Physics practically.

- skillful use of internet resources – students were using a lot of information available online during the classes, they know how to use the internet to search for the best problems' solutions. It can also help them to prepare for other classes in a better, more efficient and self-controlled way.

- programming skills – students have learned how to write applications which can enable steering the drone with a mobile phone. They created this application. Source code of these applications is open and can be used in further activities in different projects.

Each student and teacher knows the legal aspects of flying drones in Poland. Students know that during their journeys abroad they must learn and follow the local laws of the country they are in on flying drones.

Working in the project has given to the students also a lot more – self-confidence, the feeling of being appreciated, but also a different perspective: far away from everyday problems. They have also practiced their manual skills and self-reliance in solving problems.

The impact on the city of Zabrze

As for the dissemination, two multiplier events were organized. One of them was organized in cooperation of Silesian Technological University and at their premises. The local government representatives, Head of the Educational Department, teachers and students of various Zabrze school took part in that event. Media reported on the conference in local newspapers and television, as well as in online newsletters and facebook sites. We were also presenting our project at many educational fairs, such as Educational Fair of Zabrze.

The project was also presented during the Open Doors Days in our school to the students of local primary schools. They could learn how to build drones and see how to work with them. They had also an opportunity to try how to fly using the simulator. Similar presentation took place on Educational Fair where high school students come to choose the further education path. Our school participates in such events every year.

Project was presented on Science Days organized by the Municipal Council in Zabrze. Students of both primary and secondary schools could learn about the legal aspects of flying drones, use the flight simulator, learn about drones constructing and start their drone adventure.

The national impact

There were news about the conference presented in TVZ and TVS television stations.

The international impact

We presented Drone team project to all guests at our school from other projects such as teachers and students from Italy, Spain, Turkey.

Dissemination in Poland

We have widespread the information about the project by:

-school website in a special dedicated section:http://www.zs10.zabrze.pl/index.php/droneteam

- official project website which is linked from a ZS10school website:http://www.droneteamproject.eu/

- facebook site - https://www.facebook.com/DroneTeamZS10/?ref=bookmarks

- many events like: the celebration of the school year opening, educational fair, open doors days and conferences that were organized in cooperation with the Silesian Technical University.

Everybody could read information about the project and its activities on different places in the web:

- Silesian Technical University:http://www.uav.polsl.pl/?hf_lang=pl&action=news&news_id=78

https://www.facebook.com/high.flyers.polsl/photos/a.561005937253256/1181511331869377/?type=3&theater

- Municipal Council of Zabrze: http://www.um.zabrze.pl/mieszkancy/aktualnosci/zabrzanscy-uczniowie-realizuja-projekt-drone-team

Technical school Sisak –CROATIA

Impact at school

Impact for the teachers: Teachers gained new knowledge and skills which they presented to their students and also their colleagues. They learned how to work in multicultural environment and also improved their language skills while communicating with other partners and also learned English technical terms about drones. They also got a chance to get to know other cultures by visiting partner countries and learned about their educational systems and how thing work in their schools.

Impact for the students: The students got a chance to develop their critical thinking and problem solving skills, improve their self-confidence while presenting their work to others and built strong relationship with students from partner schools while visiting them and staying in their home. They also developed their digital and language skills and learned about team work. They got a chance to learn about drones and how to make and fly them but they also got a chance to get to know other cultures and other countries and their educational systems. It was a great experience for all the student who participated in the project.

Impact for the school: We presented our project to every teacher and student in our school thro presentations and workshops, schools website and Facebook page. A lot of students participated in the project so they presented the project to their friends and showed them what they are working on. For the students and teachers that participated in the project it showed how to use interdisciplinary approaches, new teaching system, new content and it build stronger relationship between students and teachers, better teamwork between students.
Our school bought materials for the drone and for its personalization which was a great teaching tool for the students. They also had to cooperate with students from other professions to build parts for the drone like propellers and outside mask.
Many students entered MOOC courses and learn about drones. They improved their knowledge about design, 3D printing, microcontrollers and programming.

Impact in region Sisačko-moslavačka county

Project was presented to primary school pupils from our region during open doors days in our school. We presented the project to 8th grade students for three years. Pupils have learned how to build drone, operate with drone and how to make dron games and about our e-Learning platform.

We organized press conference during the 5th meeting in Sisak. We had a lot of local and some national television and radio stations. They published articles and tv clips about our project.

We also presented the project in primary schools to teacher and parents of primary school students. For that occasion we printed fliers and gave them to all the participants.

We organized workshops for one class of eighth grade students and their technical culture teachers were our student who are in the drone team showed them the basics on how to construct a drone by yourself.

A presentation was made in our event solar car race SOELA.

We posted regularly about the project on our school website and our Facebook page, we posted about the progress of our project, about the meetings and everything related to the project.

Impact in Croatia

During the 5th meeting in Sisak we called a press conference. To our great satisfaction the national press HTV was there and they filmed interviews with other partners and did a lot of footage about our project and the progress of the project and broadcast it on the national television.

We did our multiplier even as a part of our solar car race. It was a great way to present our project to a lot of people across Croatia. On our multiplier event there were people from Osijek, Slavonski Brod, Dubrovnik, Slunj, Novska, Kutina, Ogulin, Otočac, Nova Gradiška, Gospić, Rijeka, Zadar i Velika Gorica.

International impact

We presented Drone team project to our guests from other international projects, Italy, France, Bosnia and Herzegovina, and Slovenia.

It was presented at our SOLAR car race SOELA that has an international character.

Our dissemination activities can be seen on our school website and Facebook page and also on DroneTeam web site:

School wesite : http://www.ss-tehnicka-sk.skole.hr/

Facebook page: https://www.facebook.com/tehnickaskolasisak7/