



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

# Methodology for creation and management of students' vocational international projects

In Erasmus+ projects - Key activity 2





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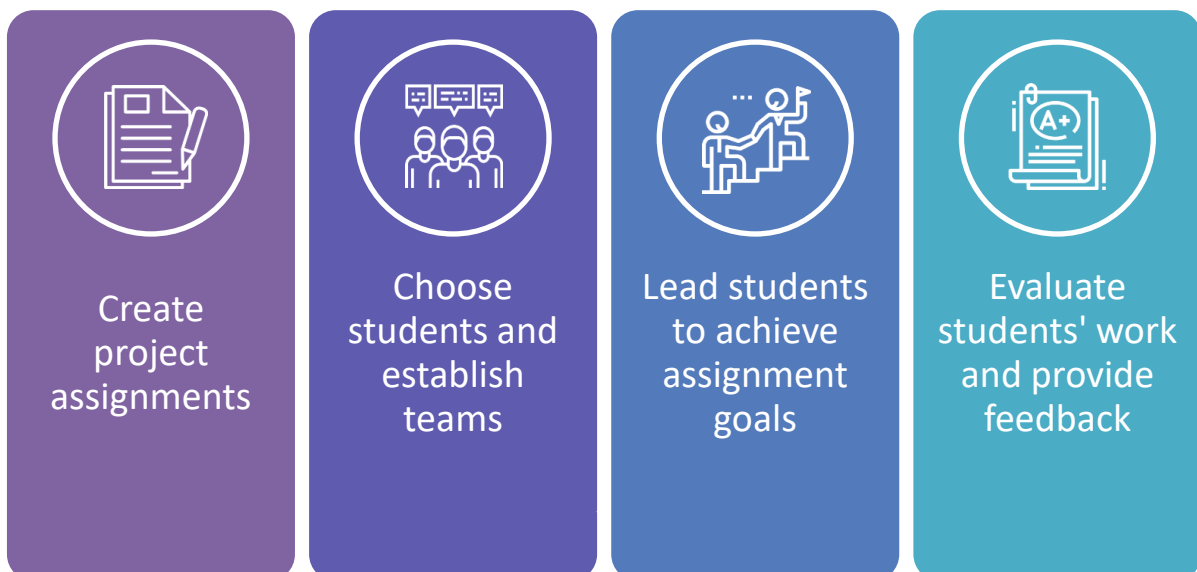
## Introduction

Project under Erasmus+ programme called „Project Learning for better Establishment on Labor market“ was focused on students from 5 vocational schools with lack of soft skills that are crucial for future industry. According to World Economic Forum<sup>1</sup>, if workers in industry want to survive next industry revolution based on automation, they need these skills:

1. Complex problem solving
2. Critical thinking
3. Creativity
4. People management
5. Coordinating with others
6. Emotional intelligence
7. Judgement and Decision-Making
8. Service orientation
9. Negotiation
10. Cognitive flexibility

Establishment and improvement of mentioned skills was made by creating small teams of students from different countries who was collaborating on same technical assignment.

This methodology was made as intellectual output **to inspire and help other schools with creating small international teams of students and help them to successfully manage these small student projects.** Whole process consists of 4 main steps.



<sup>1</sup> <https://www.weforum.org/agenda/2018/07/the-skills-needed-to-survive-the-robot-invasion-of-the-workplace>

## Creation of project assignments

Because of many schools from different countries, with different study programmes, with different equipment, the **negotiation** between schools is necessary. For these negotiations to be made, we hope that **personal contact** is most effective solution. Each school representative (eg. project coordinator) should bring with him/her **description of study programmes** that school provides for students who the school plans to involve into projects. This description should contain:

- **The age of students involved in projects** – some schools have different age groups in different study programmes. Also in puberty age 15-years old student have different attitude and priorities than 19-years old student. We hope that for the best outcome, students from similar age group (with age difference 1-2 years) should be chosen.
- **Length of study** – school curriculum has many possibilities to evaluate student work and attitude. Some schools can recognize practical skills needed to graduate by finishing the project work. For these schools preparing project assignments for students from final grades can be beneficial because they can better motivate students to take a part in the project and set the complexity of the project.
- **Subjects in particular study programmes** – knowing vocational/practical subjects and their short description can help to prepare assignments that can be finished by students in chosen grade with particular knowledge and hard skills that are necessary to finish the project tasks.
- **List of technologies that students can use in their study** – many technical projects consist of different parts/blocks that has to be compatible (e.g. fit to each other, be connected to each other or communicate with each other). Knowing technologies and equipment used at schools is crucial information to prepare assignment that will be solvable by students in cooperation over big distance.
- **Examples of projects that was made by students at school** – lot of students attending competitions with their own technological projects or make such a projects for finishing their subjects or whole study programme. This will be good start point for brainstorm the ideas of project assignments.

After introduction, **each school should establish individual negotiation with each other school** to create project assignments. Depending on numbers of schools total, number of schools involved in each project assignment and number of project teams between each school, we can calculate the exact numbers of projects as unique combinations. Let  $N$  will be number of all schools,  $K$  will be number of schools involved

in each project and P will be number of projects in each school group. Then we can calculate **total number of project** assignments T as:

$$T = P \cdot \frac{N!}{K! \cdot (N - K)!}$$

For example if 5 schools (N) are involved in projects and each project will be solved by students from 2 schools (K) and 3 projects (P) should be made between each school, then total number of projects will be calculated as:

$$T = P \cdot \frac{N!}{K! \cdot (N - K)!} = 3 \cdot \frac{5!}{2! \cdot (5 - 2)!} = 3 \cdot \frac{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{2 \cdot 1 \cdot (3 \cdot 2 \cdot 1)} = 3 \cdot \frac{120}{12} = 30$$

To create project assignment doesn't mean only to set the topic and main tasks of the students' project but also **set the success criteria**, which students have to fulfil if their project will be considered successful. These criteria will also help teachers and educators in evaluation period. Students should also know which **hard- and soft-skills are expected to be established or developed** so they can also provide their own feedback. We prepared project assignment template that can be used to publish assignments for students or can be used for taking memos while negotiating project topics. You can find the template in the end of this document.

## Students selection and teams establishment

After completing assignment templates, it is crucial to **inform students by publishing key information together with project assignments to school communication channels** like electronic displays, website, social networks, student email accounts, school magazines etc. Then **students should apply** for taking part in project. **Selection criteria** have to be transparent and students should be informed about them before selection procedure. Each school will then choose students based on those criteria.

Schools can choose between two paths – students will apply to specific project assignment or students will apply to take a part in project and teachers will choose specific assignment for them based on their skills and needs. If first path is chosen, it is always better to tell students to select not one, but more (2-3) projects they are interested in. Project coordinator will not be as restricted as he/she will be if student will choose just one project and it will be easier for him/her to make project groups.

Each project coordinator together with mentors involved in students' projects will **select the students** and the task of project coordinator is to **establish contact between them**. Every student has his/her preferred way to communicate, but easiest way to establish first contact is by e-mail. Most of students prefer to communicate by social networks or Skype. **Set the deadline for students to reply to your email** and let them confirm that they already wrote each other, introduced themselves and started to communicate. Also send them plan with dates of each project milestone. Schedule should contain dates of:

- Specification of project details (used materials, technologies, frameworks, way of communication, regularity of communication, ...)
- Purchasing materials needed for project
- Students exchanges to complete project tasks that cannot be done long-distance
- Preparing documentation
- Project presentation

It's up to each school if they want to choose not only the students but also their **substitutes** in case they won't be able to finish projects.

If you want to be in touch with all people involved in project included students, establish channel on social network, eg. Facebook group, mailing list or discussion forum, where all ideas can be shared and messages will be effectively passed to target group.

## Students mentoring

Project team in each school should have not only the project coordinator but also mentors – teachers who will observe students' progress, help them with technical or communication issues, keep an eye on following the deadlines and return them to right path if the project work will be too out of agreed criteria. These are the main responsibilities of students' mentors:

- Make sure that each member of students' team knows his responsibilities. Also check if all the tasks are properly distributed and none of students has too many or too few tasks compared to other.
- Help students with choosing appropriate technologies and work processes, but do not dictate them what to do. Check if they've chosen necessary materials to complete the project and enough amounts so you will not have to make orders too often. Also check the compatibility of chosen technologies (not only with your student but also the other team member).
- Set short term goals and check their completion, provide feedback and acknowledge achievements.
- Establish regular meeting with student to track his/her progress and avoid too long periods without knowing status of project. Also check if team members communicate regularly, because development of soft-skills is crucial.
- Provide information to project coordinator at your school.
- Evaluate whole project based on success criteria.



## Evaluation of students' work and providing feedback

Evaluation process is necessary to find out if student achieved goals set in the beginning of project. Mentors together with project coordinator will prepare evaluation charts based on success criteria written in project assignment. Evaluation process should not only check the completion of project work but also the shifts in student's hard-skills, soft-skills and his/her attitudes.

Mentor should be able to identify strengths and weaknesses of student, provide student with some recommendation to future work and highlight his/her achievements. On the basis of formal evaluation of student progress, school can acknowledge gained knowledge, skills and attitudes by issuing official certificate (like Europass certificate supplement) or allow student to complete subject(s) in which he/she made the project or allow student to use project in final exams or at least mention his work in final report of school year.

Evaluation should not only be provided by teachers with some formal measurement of student performance or evaluation of some questionnaires. Student should also take a part in evaluation process by self-evaluating his progress from the point of beginning the project to its end. Then he/she can confront the teachers' evaluation and discuss the differences as seen by both sides.

## Attachment – Template of project assignment

# Project name

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<b>Countries:</b>		
<b>Suitable for grade:</b>		
<b>Specialization:</b>		
<b>Responsible teacher:</b>		

**Project description:**

**Project tasks:**

**Success criteria:**

**Developed hard skills:**

**Developed soft skills:**



**Project:**

Project Learning for better Establishment on Labor market (P.L.E.L.)  
Erasmus+ KA2, Strategic partnerships

**Partners:**

Střední průmyslová škola elektrotechnická, Havířov, Czech Republic

Miskolci SZC Kandó Kálmán Szakgimnáziuma, Miskolc, Hungary

Zespół Szkół Technicznych, Mikołów, Poland

Stredná priemyselná škola elektrotechnická, Košice, Slovakia

Srednja poklicna in tehniška šola, Murska Sobota, Slovenia