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CROSS CUT
Cross-curricular teaching

Funded by the Erasmus+ Programme of the European Union

Édubref

Essential information for understanding current education issues

Catherine Reverdy

PROJECTS AT SCHOOL: WHAT CONDITIONS FOSTER LEARNING?

Projects, which have been part of classroom work on a regular basis since the 1970s, are frequently used in nursery school all the way up to higher education. Since the 2000s, they have also become increasingly popular in engineering schools and, more broadly, in STEM subjects (science, technology, engineering and mathematics). In France, an oral exam (*le Grand oral*) based on a project approach will be added to the baccalaureate in 2021. What are the advantages of project-based learning? Is it always a source of real learning? How can it be organised most effectively in everyday life at school?

Some historical points of reference in the implementation of project-based learning in France

- **Early 20th century** primarily in the progressive "new education" approach and extracurricular activities
- **1973** 10% of teaching time dedicated to educational projects
- **1981** at the local level, "zone" projects in priority education networks (ZEP) and educative action projects (PAE)
- **1982** start of school projects (compulsory since 1989)
- **1998** technical projects in the technological stream
- **2000** in upper secondary schools, multidisciplinary professional projects (PPCP) and group research projects (*travaux personnels encadrés* - TPE)
- **2002** in lower secondary schools, "routes of discovery" (*itinéraires de découverte* - IDD)
- **2016** in lower secondary schools, interdisciplinary projects (EPI)
- **Planned for 2021 and 2022** an oral exam as part of the baccalaureate for the general and technological streams of upper secondary school, and the completion of a final creation in the vocational education stream.

DEFINING PROJECT-BASED LEARNING

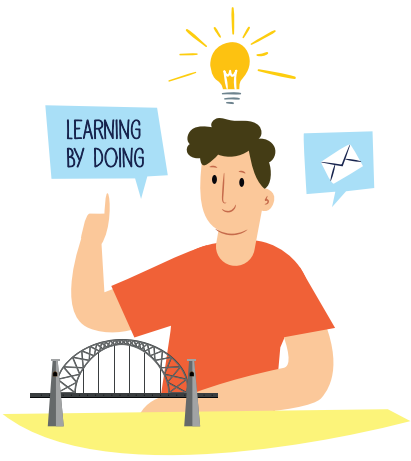
The definition of "project" is not unequivocal because the word is used to describe different situations, from the business projects done by secondary students in technological streams to the cultural projects prepared in nursery school. Most research focusing on project-based learning, a term first used by Kilpatrick at the beginning of the 20th century, does however converge towards three characteristics that are indispensable for project implementation:

- Involvement by the participants
- An end product or creation (webpage, poster, object, event, etc.)
- A planned timeline for this creation, which is an integral part of the project.

Since students are the ones involved in a project, their learning is said to be active. According to Barron and Darling-Hammond (2010), the other active learning methods are:

- Problem-based learning, used to envisage all possible solutions to a problem. It can be combined with project-based learning
- Case-based learning to develop critical thinking
- Design-based learning, whose main goal is centred on making an object.

For Dewey and Kilpatrick, two education pioneers from the early 20th century, students must be the agents of their own education, which has to involve concrete learning that gives meaning to this education. Dewey called this method "*learning by doing*".



The TWO conditions for real project-based learning

1. A problem set at the beginning of the project must serve as the central idea for activities carried out during the project.

2. A final product provides a solution to this problem.

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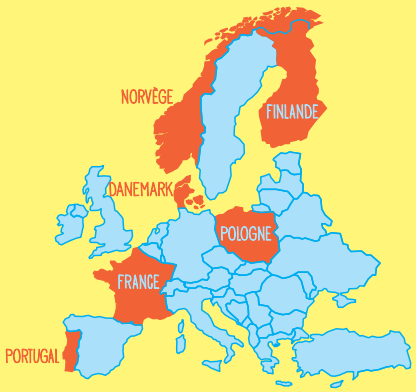
Teacher training: presentation of the Erasmus+ CROSSCUT project

The Erasmus+ "Cross-curricular Teaching" project (2016-2019), coordinated by the Centre international d'études pédagogiques (CIEP), a French public institution for educational cooperation, seeks to incorporate innovative interdisciplinarity-based teaching practices into teacher training in order to help students to acquire key competences. In particular, the Crosscut project has compared secondary school teachers' interdisciplinary and transversal practices in a study focusing on six European countries (Denmark, Finland, France, Norway, Poland and Portugal). The results show that many interdisciplinary activities are being carried out in the form of projects. An online training course guides teachers step by step in setting up interdisciplinary activities or projects with their colleagues and in sharing their experiences beyond their own schools.



WHAT CONDITIONS ARE NEEDED FOR LEARNING THROUGH PROJECTS IN CLASS?

Regardless of the theme of the project, the learning goals must be clearly defined and maintained throughout the project so that the end product or the problem to be solved does not end up being the only goal. It should be noted that not all educational projects necessarily entail learning, for instance if the students do not make an effort to make the project their own, or if it is imposed on them.
During a project, learning takes place through the necessary phases of trial and error, prompted by the creation to be made. Indeed, it is easier to see the limitations of one's reasoning or unsuccessful solutions to the problem set at the beginning of the project, if the creation or end product does not work. The skills developed specifically through projects are difficult to evaluate in context (Feyfant, 2011), but, in theory, projects are good for fostering students' interpersonal skills (projects often require cooperation) and subject-related skills (re-using knowledge in a fresh context). This double process facilitates the structuration of knowledge throughout the project, on the condition that each student is allowed to learn and move forward in the project at his or her own pace.

Students must develop the habit of anticipating what they can do, imagining solutions and taking initiatives before jumping into large projects. Having them do projects that are smaller in scale or limited to a single school subject can be a way to begin to encourage their independence.

PROJECTS ARE ORGANISED AT THE SCHOOL LEVEL

There are several different types of projects in schools:
- Educational projects between teachers and students in a school setting
- Students' personal and professional projects, which are in line with their academic and career paths
- School projects to support a school's autonomy and to align its various other projects and activities
- Educational projects beyond the school setting, which often aim to make students more independent.

> ***If a good number of educational projects are simply teaching projects, it is primarily owing to the teacher-student relationship, which has become rigidified by the compulsory curriculum. In education, as in architecture, the plan runs the risk of killing the project.***
> (Boutinet, 2005)

Projects are widespread in schools in France, and many of them involve outside partners, in particular from cultural and scientific fields. Often, planning such projects within the school timetable, which is divided into set subject-based hours in secondary education, for example, is not easy, and links with school-subject content are not always as strong as wished.

The CROSSCUT project highlighted specific factors contributing to a more successful implementation of transversal teaching in the form of projects, in particular teacher training in project design, increased flexibility as regards the curriculum for subject areas, the school administration's providing material support and leadership for the teaching staff, and the inclusion in exams of the skills developed during projects. In France, the lower secondary education certificate (DNB) contains an oral exam in which a project must be presented, such as an interdisciplinary project (EPI), and the various streams of the baccalaureate exam each will soon have an oral component: presenting a final creation in the vocational stream in 2022 and a project in the technological and general streams in 2021.

WHAT ARE THE IMPLICATIONS FOR TEACHERS?

To develop project-based learning most effectively in their specific professional contexts, teachers must be well trained for it. Indeed, teachers' roles in the construction of projects by students are myriad: they must both lastingly motivate students who may become discouraged when faced with the magnitude of the task to accomplish, and provide support at the right times while allowing students to learn by themselves. Before the project, sufficient learning time for students' different paces of learning must be planned, but not too much time should be set aside or else the aim of the project can become lost from sight.
The right approach involves flexibly structuring projects, avoiding specific pitfalls resulting from too much preparation or, on the contrary, from too much improvisation. If the project is overly structured, the students' participation will be lesser; if it is not sufficiently planned beforehand, the students might end up facing difficulties alone, without the support needed to overcome them.

> ***The project-based approach [...] is on the side of teaching learning-in-action, of learners as the leaders of their education, and of the teacher as their lookout.***
> (Proulx, 2004)

Project evaluation remains a thorny issue for teachers and must be considered at the earliest stage of project planning. Is it better to opt for self-evaluation by students, with an assessment of the skills developed and a consideration of the pitfalls to be avoided in future projects, or should one privilege co-evaluation by students within their work groups, which could underline students' involvement in the learning process? Will an exam, which, as the case may be, is often divided into a written and an oral part, be the only evaluation done? Whatever the case, the learning goals for a project, whether they are strictly subject-related or broader, must be clearly defined and small in number if they are to be achieved.

As part of the CROSSCUT project, a study was conducted that observed teaching practices in the different countries in order to take stock of their situations. In France, this study coincided with the introduction of interdisciplinary projects (EPI) in lower secondary schools, where it appeared necessary to align pre-existing projects in these schools, to formalise them and to collectively assess their impacts on student learning (e.g. motivation, self-esteem, initiative-taking, improved understanding of connections among different subject areas) and on teaching practices. A better understanding of these effects would help to improve projects, to better align them with subject-based content, and to optimise different teaching practices in organised discussions characterised by the professional atmosphere that develops over the course of such projects.

Examples of projects observed in schools during the CROSSCUT study

- Weeks dedicated to a project (France, Denmark, Norway)
- Mini-projects created for themed days (Denmark, Poland, Norway)
- Thematic programmes: discovering the world of work, journalism and law (Denmark, Poland)
- Cooperation with outside partners such as local businesses and foreign schools (Poland, Denmark, France, Norway).

How to structure educational projects upstream?

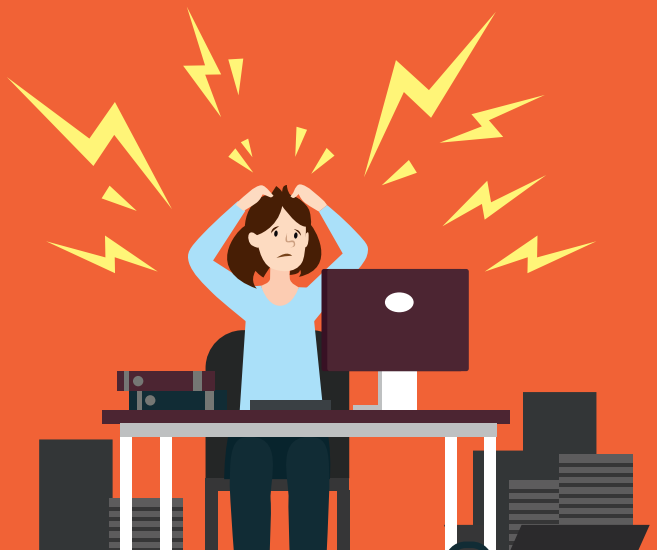
- Plan the various types of evaluation before the project begins.
- Limit the number of learning goals.
- Do not hesitate to do several mini-projects so that students become acquainted with project work and anticipate their role in it.
- Plan learning time for the students: let students build up their knowledge, and give them enough time to do it.

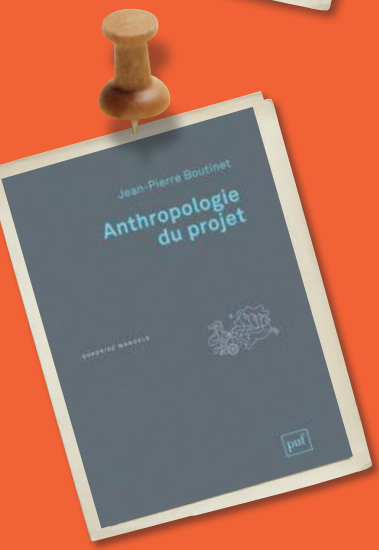
Beware of three possible project pitfalls

Excessive control: the teacher plans the project alone.

Excessive spontaneity: the learning goals are not defined clearly enough at the outset.

Excessive focus on production: the final product is too ambitious for the targeted learning goals.





HERE ARE SOME REFERENCES FOR FURTHER INFORMATION

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INSTITUTIONAL DOCUMENTS AND RESOURCES

- "Mettre en œuvre les EPI", *Cahiers pédagogiques*, no. 528, 2016: ***http://www.cahiers-pedagogiques.com/No-528-Mettre-en-oeuvre-les-EPI-10364***
- Examples of interdisciplinary projects (EPI): ***https://eduscol.education.fr/cid108061/epi-mise-en-oeuvre.html***
- The oral exam for the lower secondary education certificate (DNB): ***https://www.education.gouv.fr/cid2619/le-diplome-national-brevet.html***
- The completion of a final project in the vocational education stream of upper secondary school: ***https://eduscol.education.fr/cid133260/transformer-le-lycee-professionnel.html*** ***or*** ***https://www.education.gouv.fr/pid285/bulletin_officiel.html?cid_bo=137513***
- The new oral component of the baccalaureate exam for the technical and general education streams of upper secondary school: ***https://www.education.gouv.fr/cid126438/baccalaureat-2021-tremplin-pour-reussite.html***
- The Buck Institute for Education (BIE): "What is PBL?": ***https://www.pblworks.org/***
- The Eramus+ CROSSCUT project: ***http://www.ciep.fr/mobilite-internationale/expertise/projets-fonds-europeens/crosscut*** ***or*** ***http://www.ife.ens-lyon.fr/ife/partenariat/international/programmes-et-projets/crosscut/projet-ab-coss-curricular-teaching-bb-crosscut***

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