

Taking into account extracurricular involvement of students in engineering education

Anne-Marie JOLLY

Presidential Advisor

Commission des Titres d'Ingénieur

Paris, France

Anne-marie.jolly@cti-commission.fr

Abstract—From some years, in France, skills resulting from experiences got outside the educational system are taken into account for getting a diploma in the frame of long life learning. Since last year, there is also a law that makes mandatory not only valorization but also validation of those experiences for students during initial training.

During engineering studies, this was something often done for skills acquired in the frame of student's associative life, but the law is now broader because it implies taking into account for example experiences as citizens. This can also include community services, international experiences outside curricula...

The paper describes this French law itself, how it has been extended in the frame of European project like Extrasup, but also how it is applied in some engineering universities and the difficulties encountered in its application. It links also this student's involvement with peace engineering.

Keywords—*student's involvment, skills, community service*

I. INTRODUCTION

In France since 1993, VAE (Validation des Acquis de l'Expérience, which means validation of prior experience in curricula), makes experiences in associations or trade-unions useful for obtaining part of diplomas: as well experiences as classical courses allow people to obtain skills.

Since the law "Egalité et citoyenneté", that has been completed by a decree, higher education institution must also recognize student involvement in activities outside curricula.

This is a new point for many fields of education but, as engineering education already used to recognize some of these activities, a statement has to be made: all institutions do not recognize the experiences as indicated in the law!

At the same time, European institutions decided to have a reflection on those subjects too, and during a year, a European project group called ExtraSup made investigations on the best ways to make this recognition available everywhere. The

difficulties encountered in this project are witnesses of the difficulties that institutions encounter applying the law.

As accreditation agencies include this recognition as part of evaluation of student life, it is necessary to make a point on those subjects and, if necessary, to change the accreditation criteria for this domain.

After the dramatic events that occurred in France two years ago we hope that citizenship involvements will lead students to more implication in the life of society and consequently will help to keep peace in countries worldwide.

II. THE FRENCH LAW

A. First attempt : equality and citizenship law

Since 1993, institutions were used to the fact that adults came to them asking for a recognition of prior experiences and not only of professional ones. This recognition is a true validation because a commission looks into the details of what is presented, makes investigations if necessary, and decides if those experiences can be considered as part as a diploma: this was, in France, the beginning of a true reflection on skills acquired either in curricula or elsewhere, many papers and analysis have been realized on this subject: [1], [2], [3].

In November 2011, for the first time, a ministerial circular on the development of associative life and student's initiatives defined a national frame to the expansion of student's involvement, giving each university the freedom to recognize this involvement according to its own arrangements.

So, universities thinking that this involvement was the basis of apprenticeships recognized it and other did not. We must say that amongst engineering education institutions, more institutions were in the first situation that in the second one, due to traditions existing in those curricula.

The article 29 of "equality and citizenship" law in date of January 2017 makes not only possible a valorization of extracurricular involvement of students but makes mandatory its validation in the frame of the curricula of higher education institutions. This extracurricular involvement can be as well

volunteer as civic service or defense operational reserve. This law is the exact equivalent of what was done for adults in 1993.

B. A decree and then a ministerial circular

In May 2017, the application decree was published and in October 2017 a circular came to put it in application. We must precise that at this time 70% of universities were already applying in a form or another valorization of student's involvement; but from now, validation should take the form of credits (that can replace a teaching unit) or exemption of internship or bonus on a mark. This validation must also appear in the diploma supplement.

The institution must define in its academic council modalities, and schooling adjusting must be realized for students having responsibilities.

Institutions are invited to use skill portfolios, distance teaching and tools are to be given to institutions to help them.

One of the tools is being realized through the European Project Extra Sup [4] whose aim is to collect best practices in the field of validation. In France many associations (Animafac being one of them) [5] exist in the domain and their experience was useful but the experience of Universities and particularly those concerning engineering education revealed to be very useful too: in 2013-2014, 53 institutions recognized student's commitment while four years before only 13 of them did!

III. THE EXTRASUP PROJECT (ERASMUS+)

The project aims at the recognition and guarantee of the quality of extracurricular skills of students: two enquiries took place in Europe and a methodological kit is being created. The project revealed more complex than anticipated because it must be finished in January 2018 but it will be in November 2018.

A. The aims

The project first aimed at collecting opinions and practices through Europe and at the light of Bologna Process (of which European Credits Transfer System is a part). Many groups work in parallel: students and teachers from all countries of Europe, managers of education, managers of the Bologna process, members of accreditation agencies. So, it was really possible in each group to make comparisons of what was convenient in one country and not in the other so as to define best practices.

B. The results

First result is the fact that people took time to discuss and sometimes changed their minds on the subject. The second evidence is that no specific framework has been developed for this recognition but the skill's frame of the course only has been used.

We discovered that some countries such as Spain already edited a document describing all the activities being possibly validated. Conclusions

The kit that will be realized must come in complement to practices usually done in institutions, not to replace them but to improve them.

Students must be associated to realization of the devices leading to recognition.

The final structure of kit will be constituted of three kinds of separate forms:

- practical ones and tools such as portfolio, badges

- forms giving arguments to convince teachers and stakeholders

- necessary elements to guarantee quality of the process

The concluding conference of the project ambitioned to open the mind with interventions on the sharing of knowledge [6].

IV. EXAMPLES FROM ENGINEERING UNIVERSITIES

Many activities can be considered as extracurricular activities such as: internship, international experiences, projects taking a part in a competition, service and humanitarian individual or collective project; some of them are mandatory for engineering education and so, cannot be considered twice. In many documents we see such experiences included in the form of a project part of the curricula [7]. If this project is part of a curricula, it cannot be considered by the law.

The new element is the obligation to take into account associative and volunteering experiences especially citizenship: does citizenship give skills useful for engineers? This is a question often asked by teachers!

A. Considering soft skills

From some years, the view on engineering education has evolved and emerging from the view of BOEING [8], institutions have to describe their cursus in terms of either learning outcomes or skills acquired.

Considering technical skills this presentation was initially a challenge, but as institution had for VAE (see before) the necessity to do so, it took some time (about 10 years) but they finally succeeded.

Concerning soft skills, things were more difficult: is it necessary to get soft skill during engineering curricula? All the European countries do not agree on this, for example Flanders institutions do not think so.

But most of the skills obtained from student involvement concern soft skills and many soft skills are concerned [9]:

- communication: in all activities, students have to interact with other people either student or high ranked people or people coming from social classes different from theirs. This is one element which is very developed because, at the beginning of this great student's activity period, there have been difficulties linked to bad communication and associations had to prepare students before coaching pupils of difficult parts of the city, for example [10]. On the contrary when you ask students coming from low socio professional categories to meet a CEO or an important people in the city, you have also to prepare them, especially is they need to ask him either time or money for the preparation of an event. Breaking the codes is a

necessity and perhaps, it is the first greatest benefice of those extracurricular activities

-critical spirit: when students have to act on their own and not under the control of teachers, they can measure the consequences of their decisions, first time they will perhaps take the bad decision but second time they will take more time looking through all consequences before acting. This is particularly the case when students participate in a trophy.

-solidarity and teamwork: many associative activities are group activities and even if projects inside curricula also need teamwork, this team work is controlled by the teachers; when students realize extracurricular activities, it is not the case. So, they can discover by their own the fact that if the whole team does not follow the project, it does not work; they discover the necessity to help weaker students, to split the work, to take profit of every one skills.

-open mind: the project very often leads students to situation they had not anticipated; all teachers know that for pedagogical activities, everything is prepared, so that students could reach their aim; this is not the case in extracurricular activities and sometimes they have to put in practice the agile methods that they have learnt in the curricula. The fact of meeting other categories of people in the society or at international level can also be a good element for young people that had always lived in the same region with the same people.

-leadership: many students that ask for a validation ask it in the frame of management of a project, an event or an association. This is a strong experience to lead other people and even if they are initially friends, discovering keys of management can be something painful.

-self organization: extracurricular activities are conducted outside the times of studies, it is necessary to plan the project using techniques used for project management, sparing time from leisure, organizing oneself when intra curricular project deadline arrives at the same time as extracurricular deadline

-managing a budget: many associative activities need money, for some engineers going outside technical problem is not evident, so this apprenticeship is very important

-ethical conduct: it is the first time that students are in front of ethical problems that they met only in theory, this appears particularly in the responsibilities taken inside the university and at international levels.

-flexibility: some projects begin with an aim that can change especially in medical domain, this can also be the case for international affairs (problems of visa), students have to deal with all these situations

-context depending behavior: engineers have to manage complex situations, in real life, it is often the case and which is fitted in a certain situation is no more in another one, especially in social or hospital services.

The French accreditation agency for Engineering Education has defined 14 "skills" required for graduated engineer's education [11]. Only 3 of them being technical ones, so the other are in link with the soft skills that can be obtained by

extracurricular activities, this is was CTI was member of the Extra Sup project.

B. Modalities

Many different modalities are encountered in institutions but they can be classified in two categories: credits or bonus on a global mean:

-credits: one point is that students think that volunteering activities must stay volunteer; if you give credits for those activities inside a diploma you are to be able to have an equivalent for those who do not act as volunteers, this is the case in many universities where some credits are given either for extracurricular activities OR for following a course with examination or pitch at the end. In the situations encountered this number of credits could be around 3 ECTS (one year is 30 ECTS). Those credits can be obtained only once during a two or three-year curriculum

-bonus on the global mean: this is less evident since Bologna process is applied, because marks are sometimes no more used. Maximum bonus on the global mean of a student could be, for example 1 point. The commission examining activities of student will determine according to the importance of its activity which percentage of this point can be attributed to him. However, in some universities, as the jury is considered as sovereign, this bonus can be finally not given if the student has not had good conduct (absences.)

The second element is the way to attribute this validation; a council has to be created and this council must include representatives of students, people representative from the administration, and perhaps people from companies. When the number of students asking for validation was low, one meeting of this commission was enough each year, with the new law, institutions fear that many meetings be necessary and so impossible to put in place.

Concerning exemption of internship or planning amenities, this must be defined by the education council of the university or by studies rules.

C. Difficulties encountered

It appeared when discussing during Extra Sup Project especially with students outside France that this "volunteering practice" is not so common, in some countries such as Serbia, volunteers are very badly considered. The problem is really very cultural in fact and it will be impossible to define criteria through Europe, only guidelines will be possible.

The second point is the money necessary inside institutions to elaborate processes accepted by everyone. It seems that for some activities people from companies are the best ones to appreciate activities realized in companies. Time is money, and it is necessary to have a financial dotation to pay for them. This is not a problem for adult's VAE because companies are interested in adult's education, it is less evident concerning students.

If you have a committee, meeting frequently, that look each file to be sure that experiences described are realistic, you have also to appoint members for this committee. This problem did not arise for VAE, because there were less people concerned, and because French government gave money for hiring people.

The last point concerns the teachers of the institution. All of them are not convinced of the usefulness of this recognition. It is the reason why some universities declare that at the end of the process, the jury will stay sovereign.

D. Open questions

Is it possible both to get money and credits for extracurricular activities?

In France for many years the answer was no, nowadays institution evolve on this point: this question arises particularly concerning tutoring pupils in lower education because devices such as “Cordées de la réussite” implies giving money to students.

It can be argued that it is the same for apprenticeships that are inside the curricula, a project is either in or outside and cannot be both: you cannot earn twice the credits for the same activities; but due to the necessity of work for students this is not considered as such.

V. HOW CAN THESE EXTRACURRICULAR ACTIVITIES ENCOURAGE PEACE?

A. Some activities recognized by the law are directly concerned

The law imagined just after terrorist attacks in France has specified points that are directly in links such as citizenships which in the spirit of the government includes secularism.

Some preliminary studies had shown that some populations in Engineering education could be more particularly concerned by terrorist temptations [12] perhaps because of a specific state of mind.

A specific point is also made on civil service and defense reservists, but they are very few in Engineering Education Institutions, because those studies are a full time job, the majority of volunteering students act either in management of student's association inside university, or in social services (hospital, schools, prisons) or in cultural services.

It happens also that international affairs are concerned. The association “Engineers without frontiers” organizes missions devoted to improve situations in developing countries such as schools, hospitals, infrastructures. For these activities, the link with peace is quite clear because reducing the differences between countries is a direct way to reduce resentment between them and also because education is one of the pillars of peace. The skills gained by other student's activities

But moreover, all activities developed outside (school, nation, continent) make people know and understand better. This includes a great variety of activities and even caesura can be considered as such.

If one considers the fact that solidarity can be developed through the work done altogether to put in place a forum dedicated to job searching, this proves that constructing peace begins also in neighborhood activities.

So, generally speaking all extracurricular activities have a link to peace.

B. On the contrary ability to give free time for free stays important

But as association of students declared, there is a risk that those activities are artificial and solely dedicated to gain credits.

One can object that the reward is small in front of time dedicated to extracurricular activities. The commission will not attribute credit to activities done once or passively such as attending a conference.

Freedom is a strong point in this recognition that is why universities that manage to realize this recognition in parallel with other classical activities, are appreciated by students.

VI. CONCLUSION

Several points have not found solutions in the project, through Europe there are many cultural specificities that must be taken into account. The global amount of extracurricular activities is continuously increasing, this gives hopes for improving teamwork and solidarity.

Peace construction and preparation of young people to it is a long way, but those extracurricular activities can really be considered as part of it.

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