Looking backwards to the evolution of the recommendations emitted by an accreditation agency.

The case of French Engineering Education

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ABSTRACT

Since five years Commission des Titres d'Ingénieur computes, for each campaign of accreditation, the numbers and percentages of each kind of recommendations emitted towards the institutions that it has evaluated during the campaign.

After this time period it was possible to compare and analyze the evolutions of the different kinds of recommendations, in relation to the evolutions of CTI's criteria (launching of a new standard on criteria in 2016), and in relation to the evolution of ENQA's ESG, but also in link with the evolutions of society and companies.

It is interesting to see that Quality, that was not even considered five years ago, has become one of the major criteria, making CTI become as well an accreditation agency as a quality assurance agency. This can explain also the evolution of this agency to a lean accreditation experimentation using hypothesis that Global Quality could drive program quality.

Another recommendation which is now the more frequent one concerns internationalization of curricula, this recommendation has much to do with specific French recommendations on the necessary internationalization of engineering.

But criterion concerning recruitment of students always stay an important one because the quality of recruitment partly induces the success of the curricula.

The paper will analyze the main topics of recommendations and their evolution as well as the disappearance of some other ones, showing either that institutions have reached their aim or that experts are more concerned on other fields…

1 HOW CTI (COMMISSION DES TITRES D'INGENIEUR) WORKS

1.1 A campaign of accreditation

Each year, in France, a part of the Engineering education institutions is accredited according to a process which has a periodicity of 5 years. After this annual campaign an analysis is conducted to know on which fields most institutions have to improve.

With each accreditation decision, there is a series of recommendations emitted and the institution has to answer to these recommendations within the next 5 year's accreditation period. This is completely in accordance with ENQA principles that ask for more follow up of the institutions.

It is very interesting to observe the evolution of those recommendations because many processes intervene: the first one is the evolution of the criteria of the agency (our criteria evolved in February 2016) but also the evolutions of ENQA's ESG.

But there is also a global evolution of evaluation in all the countries, for example around us many countries (Belgium for instance) have replaced program accreditation by institutional accreditation, making Quality Assurance much more in the scope of their preoccupations.

Another factor is the evolution of society itself, for example student is now at the centre of the preoccupation of institutions according to ESG, so, taking into account their extracurricular involvement becomes something much more natural in institutions.

All these effects are also naturally filtered by the inertia of experts but, in France we have a double level of hierarchy of experts (some are members of CTI, others are external experts); for these "internal" experts, members of CTI, the inertia is smaller than in other agencies where all experts are recruited outside the agency. Furthermore, education of experts has progressed and we try to imply them at least twice in our accreditation processes each year.

1.2 How recommendations are elaborated

When the audit committee visits an institution it has to verify that all standards are fulfilled, some of them being more critical than others. But the committee as well as the institution knows the hierarchy of criteria for CTI.

This committee elaborates after the audit a report with a swot analysis, this swot analysis reflects only the opinion of the audit committee.

Recommendations are issued both from this swot analysis and by reflexions issued from members of the plenary assembly (32 people) who also know other schools of the same categories or who had audited this institution in the past.

The recommendations are formulated and improved by mail till the next meeting where they are voted so that they really reflect the debate that took place during the plenary meeting.

We tried some years ago to put in place a standard list of recommendations but this has not worked. So, very often each recommendation addresses 1, 2 or more fields.

To be able to evaluate CTI's activity and then to use this evaluation for improvement, it is necessary to analyse the whole set of recommendations for a campaign and then to present this analysis, firstly to the members, then to the institutions; each institution usually knows only its own recommendations, so this analysis is really very important so that the institution can benchmark itself against others.

This is not the only system, for example in French speaking Belgium there is a transversal analysis done after each evaluation campaign, this also gives a global idea of the state of institutions. But this ability to know where you are stays really important, this process (either computations of number of recommendations or transversal analysis) must be done to help institutions.

1.3 How institutions deal with their recommendations

According to the recommendation of ENQA, a follow up will now exist in CTI that is to say that institutions will have to give at the mid-term of accreditation duration a document indicating how they have tried to follow the previous recommendations emitted by CTI.

The following of recommendations will be studied more in details at next reaccreditation term.

The presentation of recommendations made at our February conference is also used by institutions that have not been accredited during the year but will be in another very close future, to know which tendencies are those of CTI.

2 GLOBAL EVOLUTION OF RECOMMENDATIONS

2.1 The global result

The first element to be mentioned is the increasing of the number of recommendations for each program:

in 2017-2018, 652 recommendations were emitted for 250 programs evaluated while in 2015-2016, we had only 504 recommendations for 349 programs. This is nearly twice!

Few deductions can be made on this point except the fact that, while the global quality of institutions is increasing, experts go much more in details during the audit.

The *table 1* below indicate the recommendations that were quoted at least 10 times in 2017-2018, there are also 32 recommendations that are less frequent and will not appear on the table, we will comment on some of them later on.

You can find the remaining of our recommendations on the website of CTI [1]

2.2 Considering the results of the top part of the array of recommendations

The 3 recommendations more quoted since the beginning of our studies on recommendations are:

-Internalization process

-Skills

-Recruitment of students

Internationalization processes: for some years (in 2012 this criterion already appeared), in France, the accreditation agency tries to strongly encourage international mobility in engineering studies, this was not evident at the beginning because, as everywhere in the world, students find that they are very well at home!

But both the fact that half members of CTI come from companies and are already convinced and the fact that the other half come from academy and has international relations for research purpose, makes members sure that, as for the minimum level B2 in English put as a condition 10 years earlier, the international mobility is necessary and has sense.

However, this recommendation stays at about 10% for the last years because in apprenticeship education, make this mobility mandatory is not so evident in some companies.

Skills: the description of programs in terms of learning outcomes is not new; the process in many institutions is still not completely achieved and particularly the learning outcomes evaluation.

14 years ago when this way of describing programs appeared, very few people in engineering education knew how to proceed and very often they only transformed syllabus without a real contribution of the professional world. That is why this recommendation still exist because in many cases links between modules of the program and skills does not really exist or when this matrix exists, in no matter evaluation of skill as required by ENAEE is realised.

Table 1. Table of more frequent recommendations

Thématiques des recommandations	**2014-2015**		**2015-2016**		**2016-2017**		**2017-2018**	
Internationalisation and multiculturality	27	22,50%	46	9,13%	41	8,32%	61	9,36%
Skills and learning outcomes	28	23,33%	51	10,12%	36	7,30%	56	8,59%
Recruitment of the students	24	20,00%	29	5,75%	34	6,90%	47	7,21%
Quality assurance					31	6,29%	40	6,13%
Communication			29	5,75%	24	4,87%	30	4,60%
Research			19	3,77%	23	4,67%	30	4,60%
Bologna process	22	18,33%	23	4,56%	10	2,03%	27	4,14%
Means			12	2,38%	9	1,83%	27	4,14%
Companies			24	4,76%	20	4,06%	18	2,76%
Employment			36	7,14%	29	5,88%	17	2,61%
Level B2 in English			12	2,38%	13	2,64%	16	2,45%
Student's failures			17	3,37%	7	1,42%	16	2,45%
Student and associative life	2	1,67%	12	2,38%	2	0,41%	15	2,30%
Sites			9	1,79%	16	3,25%	14	2,15%
Internships and projects	2	1,67%	13	2,58%	13	2,64%	14	2,15%
Fiche RNCP			9	1,79%	6	1,22%	14	2,15%
Human and Social Sciences			8	1,59%	7	1,42%	13	1,99%
Synergie			14	2,78%	3	0,61%	13	1,99%
Multisite					14	2,84%	12	1,84%
Hours/content			8	1,59%	15	3,04%	11	1,69%
Governance			14	2,78%	10	2,03%	11	1,69%
Councils			15	2,98%	15	3,04%	10	1,53%

Recruitment of students: in France, for engineering education institutions, recruitment is selective, that means that a specific competition exam is organized for recruitment, however these competition exams are very numerous and some

institutions go very far in the lists so as to be able to recruit, or do not have any candidates to their competition exam, so CTI insists so that the size of programs are fitted with the potential recruitment of the institution either by increasing communication or by reducing the size of recruitment.

These 3 first recommendations are “classical” for engineering education, the 4th place of quality surprised all of us!

2.3 The case of Bologna Process (7th rank)

Since the LMD system exists, other basic rules such as transparency of programs but also ECTS rules [2] used for attribution of diploma exist too. In France there was another system existing before the ECTS system which was the use of pondered means as a condition to succeed for a diploma.

The following of the principles of Bologna process has improved but it stays hard to make institution consider capitalisation instead of compensation. So each year there are still about 4% of the recommendations that deal on this specific point.

3 NEW RECOMMENDATIONS THAT APPEARED IN 2016

3.1 Quality

Quality appears as the 4th recommendation since 2016-2017. It was new in 2016-2017 and it stayed at the same level next year.

This fact is very interesting for CTI. First it shows that quality culture is not completely integrated in our institutions, but it also shows also that experts are more sensitive to this point now.

The fact that this recommendation did not appear before is also very symptomatic of the importance that took ENQA in the elaboration of our processes. Before, some institutions were audited by ISO committees and CTI also put recommendations on the evaluation of curricula by students, but the most important part in the paragraph concerning Quality in the audit report concerned the following of recommendations.

Now this Quality process is considered in a much global way: is quality present from top to bottom? are there mechanisms allowing continuous improvement in the different services of the institution? how does the governance broadcast a quality culture? That are questions that we try to answer when we visit an institution.

The fact that in the report mission, the paragraph concerning quality is now situated just after the governance and no more at the end as previously is also something that helps members to take this part of the audit with more consideration.

In the process of lean accreditation that was put in place last year, only two information are asked to the institution: the evolutions that took place since the last audit and the quality process too; CTI suggests that if the quality system of the institution works, then it will be able to realise the evolution of programs with the opinions of all stakeholders, internal and external. This is a real subject of debate inside and outside CTI.

3.2 Multisite

The institutions are very encouraged to regroup themselves: Shanghai ranking, French Ordonnances….

In many circumstances the same diploma can be obtained in several places in France, in the same institution. This phenomenon was not very current before: before only 3 institutions in France had such configurations (ENSAM, CESI and CNAM).

When a diploma can be obtained at different locations CTI asks that the recruitment process be the same, the syllabus be the same, and the conditions of the final exam are the same. Very often we observe that these conditions are not respected that is why CTI has to give a recommendation on those points.

3.3 Working time of the student, feeling of belonging to the institution

In its last version of European Standard and Guidelines, ENQA asks that student be at the center of the education process. This was new for some institutions!

In 2016-2017, the percentage of these two recommendation was 2, 6% and in 2017-2018 it was only 1, 5 %; this show that institutions begin to take this point of view in consideration.

3.4 Multidisciplinary organization of courses

In most case, each engineering programs stay isolated inside the institution even if many other disciplines exist in the institution; CTI tries to make institutions reduce walls between programs, for example organizing projects, because innovation only occurs in multidisciplinary organizations.

This is a hard job because it obliges to change mentalities.

4 THE SPECIFIC CASE OF INNOVATION AND ENTREPRENEURSHIP AND OF SUSTAINABLE DEVELOPMENT

Recommendations concerning those two fields appeared very soon and before 2014, the strong advance on these subjects was made with creation of PEPITE which is a specific device for increasing student-entrepreneurs in France in 2012.

It is interesting to observe that the introduction of Sustainable Development in the programs was launched the same year but appeared in the recommendation only one year later, this show that the personal effect of minds of experts has its role in the recommendations given to institutions too: at this moment more people in CTI were convinced of the necessity to be preparing students to entrepreneurship and thought that initiation to Sustainable development could be done elsewhere!

The percentage of recommendations on those two fields slowly decreases: only 3 or 4 programs are considered as not having introduced for all the students an information on entrepreneurship and the same number of programs has not yet introduced Sustainable Development.

5 RECOMMENDATIONS THAT APPEARED IN 2017-2018:

ACADEMIC REGULATIONS, COACHING, DIVERSITY, RETURNS ON EXPERIENCE

These 5 considerations concern the engineering students themselves:

Academic regulations: The rules concerning scholarship of students have to be known by students, according to Bologna process, that means that academic regulations must include everything that concerns the students, particularly the

conditions for graduation and recruitment, the number and organization of pedagogic modules, the conditions for payment of the fees, but also the way to issue an appeal. This last part is new for institution so the recommendation has been given to 8 institutions.

Coaching, bridges: With the increasing diversity of students, institutions have to put in place coaching and bridges so that all students recruited have the same opportunities to succeed. When CTI discovers that the rate of success in an institution is not as it should be, the institution is asked to put in place specific bridging or coaching devices.

Diversity: This is the main word of the past period concerning recruitment in engineering. In total 11 institutions have this kind of recommendation for either social diversity or gender diversity.

Returns on experience: In France students have to make 3 internships during their engineering studies. Very often when the student comes back to the institution, nothing is organized to share those experiences with other students, it is the same with apprenticeship education.

This recommendation aims that institution put in place specific hours of exchanges between students and teachers on what they did and lived in their companies.

6 CONCLUSION

We see in this study that many recommendations follow, sometimes with a little delay the new criteria of CTI or ENQA. This year we have launched a new R &O [3] that will be considered for the campaign from June 2019.

The role of accreditation agencies is to encourage initiatives and to share best practices, not to destroy institutions: recommendations must help institutions for their continuous improvement.

Many new fields could appear soon: digital evolution, a focus has been launched… Taking into account extracurricular involvement of students could also appear specifically: a new law was launched last year that made recognition and valorisation of involvement of student mandatory in all curricula.

Recommendations are a living object!

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