

Two International Engineering Programs in France

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Introduction

Until very recently, France had been notoriously poor at offering high-level engineering programs to international students whose mother tongue was not French. In the author's opinion two of the reasons for this situation were:

- A relatively stultified and non-proactive education system at university level, unable (and perhaps, unwilling) to adapt to the new phenomena of the Europeanisation of educational programs and globalisation, in general.
- A belief that the French language would remain a major force on the world's linguistic stage, on a par with the influence exerted by English, and that no special effort was necessary to encourage international students to choose to come and study in France.

As a result of this mistaken attitude, the numbers of international students registering at French Universities and "Grandes Ecoles" declined sharply in the early 1990's, as many international students saw greater career opportunities for themselves by registering at English-speaking universities in countries such as Australia, Canada, the UK and the USA. The French are also only just beginning to become aware of the economic potential of attracting international students to France, both in terms of profits made from the tuition fees paid by international students and, to a lesser degree, from the future influence which such programs will have over the international students once they have graduated and returned to their home countries.

For all of the above reasons, the French Government decided to set up a special agency called EduFrance which, since 1998, has been promoting French education throughout the world. Run jointly by the Ministry of Education and the Ministry of Foreign Affairs, EduFrance has opened centers in several countries and is now present at most major Education Fairs where it offers international students the opportunity to join in the French Education System. (See Figure 1).

Another series of programs being offered by many French "Grandes Ecoles" are the "Master of Science" courses, which will be examined later in this paper. This offering is not sponsored by any French government agency, but by the "Grandes Ecoles" themselves. It is a remarkable development on the French educational scene.

Figure 1 - Engineering education in France, the U.S.A. and the U.K.

QUALIFICATIONS AWARDED				
YEARS	FRANCE		U.S.A.	U.K.
9			Ph.D.	
8	Doctorat			
7				Ph.D.
6			MS	
5	Diplôme d'ingénieur/ M.Sc.	Diplôme d'Etudes approfondies (DEA)	(MS)	M.Sc.
4		Maîtrise	BS	M.Eng.
3		Licence		B.Sc.
2	Competitive Entrance Exams to <i>Grandes Ecoles</i>	Diplôme d'Etudes Universitaires Générales (DEUG) DUT/BTS	Associate Degree	
1				
YEARS	Grandes Ecoles	Université	University	University
	Baccalauréat		High School	A Levels

The “n+i” program

A. The “n+i” program was presented at the 2001 ASEE Conference in Montréal. Its main objectives are:

- To attract high-flying, international students to French universities and “Grandes Ecoles” where, after a special 6 month “Induction Course”, they gradually join in the mainstream Engineering Programs with regular French students and, after a total of 2 years in France, graduate with the national French degree of “Diplôme d’Ingénieur”. On arriving in France, they have already been awarded a 4-year “Bachelor”-type degree from a university in their home country.
- 54 French Universities and “Grandes Ecoles” are now members of the “n+i” program which covers the whole gamut of engineering disciplines from Electrical, Mechanical and Computer Science, through to highly-specialised colleges in Food Safety, Modern Optics and Aeronautics.
- The “n+i” program includes an intensive course in the French language, which the international students have to master in around 6 months, personalized tuition throughout the 2 years spent in France and a final-year project in French industry. Tuition fees are of the order of 6,000 Euros per year and include all language tuition as well as the regular classes.

B. Academic Results

Class of 2002

The first “n+i” students arrived in France in July 2000 and graduated in the summer of 2002. The results were:

Numbers registered in 8 Institutions	:	23
Different Nationalities	:	7
Number of Graduates	:	20

While modest, these figures showed that such an ambitious scheme could work. 13 of the 20 students have returned to work in their home countries, 4 have remained to pursue a Ph.D in France and 3 were hired by French companies in France.

NB. These students were recruited through presentations made in their own countries by staff from the “n+i” program.

Class of 2003

Initial contacts (made through emails + EduFrance Forums
in various countries + Visits to students’home countries

by “n+i” staff)	:	441
Application Forms received	:	140

Students selected	:	86
Different Nationalities	:	7

76 of these 86 students are currently in their final year in France. (10 have left the program, either through their personal choice or for reasons of poor academic performance).

Class of 2004

Initial contacts (through emails + EduFrance Forums in various countries + Visits to students' home countries by "n+i" staff)	:	1456
Application Forms received	:	645
Students selected	:	107
Different Nationalities	:	17

Class of 2005

Recruitment is currently taking place for those candidates wishing to start in France in July 2003. For the first time, applications can be made on-line, using the specially-designed web-site at: <http://www.nplusi.com>

At the moment of writing (2 January 2003), 2,400 contacts with potential students have been established. 1,499 candidates have begun the on-line registration process; 645 candidates have completed this process; 555 candidates' applications have been validated and are now open to offers from any of the 54 French Universities and "Grandes Ecoles" currently making up the "n+i" network.

The following table provides a statistical summary of the present situation of the "n+i" program:

Class of ...	N° of students	N° of participating colleges
2002	23 (20 graduated)	8
2003	86 (out of 144 selected)	~30
2004	107 (out of 188 selected)	~50
2005	~300 (out of a probable 1500)	~60

C. Problems and Solutions

Recruitment

The problem : Selling the product.

Having a good product to put on the market is a necessary prerequisite to any educational venture. Getting your product known is another issue and one of the initial problems of the "n+i" network was its lack of visibility. At first, the whole venture depended on the personal visits to foreign countries by French professors whose colleges were members of

the network.

The solution : The involvement of the French government in the form of the Ministry of Education and the Ministry of Foreign Affairs has opened new avenues. French Embassies and Consulates, especially in countries such as India and China, now regularly host meetings and Forums of the “n+i” network, generally in the framework of the EduFrance program. In its first four years, the “n+i” program should grow ten-fold in the number of students it recruits and in the range of colleges which have/will become members of the program. The systematic use of the dedicated web-site for promotional and recruitment purposes is another huge asset.

Language difficulties

The problem : Language skills in French.

The solution : Living in France, studying French, mixing and socializing with the resident French student population.

The solution seems simple and logical, but reality is something different. During the 6-month “Induction Course” at the beginning of the program, all the international students live on campus and have around 400 hours of timetabled French classes. They all acquire a reasonable grasp of everyday spoken French, but problems do still remain with the more academic aspects of the language. Giving presentations in French, writing reports in French and working in student teams using French as the common language all continue to pose problems. The author’s French scientific colleagues are often appalled by the poor quality of the language skills of our Chinese and Indian students from the “n+i” program, and, in some cases, the author is certain that the poor linguistic ability of some of his international students does prevent them from understanding some of the lectures. This handicap can only be overcome by an extra effort from everyone concerned: by the international students themselves, who must consciously try to spend one hour per day working on their French and trying to integrate into French life by joining some of the student clubs and societies; by the French students who offer to become tutors/partners/twins/mentors with an international student, not just in the laboratory and lecture-hall, but outside the more traditionally academic pursuits of a university campus. We have tried organizing cultural events involving visits to local tourist attractions as well as more “down-to-earth” activities, such as “Indian Evenings” (i.e. the Indian students prepare a curry!) and parties of different descriptions, but a lot of progress remains to be made.

Cultural problems

The problem : Adapting to a different environment.

The solution : Throwing yourself in at the deep end.

The author’s own French students who perform their project work in the USA or the UK find the food in these two countries abominable. Similarly, an Indian coming to France needs time to get used to French cooking. The college restaurant has tried to adapt by systematically offering a vegetarian dish at every meal, something unheard of in France

until very recent times. The onus, again, must be on the shoulders of the visiting student, whether it is a French student going to America or a Chinese student coming to France. Our motto must be: “When in Rome...” The temptation for a Chinese student in France is to mix with fellow students from his/her own country, to prepare their own meals which they eat together. This attitude is to be avoided, but this is easier said than done.

Finally, everyone who works in the Department/Faculty/School must be sensitized to the specific needs and requirements of our international students, beginning with the lady who works at the “Reception Desk” and ending with the Dean. In the author’s college, one third of the 900 students are of non-French origin, but old habits die hard and there are still several colleagues who find it difficult to come to terms with the presence of such a high percentage of international students. Such a blinkered attitude is, in the author’s opinion, unwarranted and backward. “No man is an Island,” words which have special significance in the aftermath of 9/11.

“Master of Science” programs

Over the past two years, many French “Grandes Ecoles” have begun offering “Master of Science” courses. Unlike the “n+i” program, which leads to the national degree of “Diplôme d’Ingénieur”, the M.Sc. degree is awarded by each individual “Grande Ecole”. The author’s college is one of three Graduate Colleges in Telecommunications Technology in France, known collectively as the GET or “Groupe des Ecoles des Télécommunications”. These three colleges are:

- L’Ecole Nationale Supérieure des Télécommunications (ENST in Paris)
- L’Ecole Nationale Supérieure des Télécommunications de Bretagne (ENST Bretagne in Brittany/north-west France)
- L’Institut National des Télécommunications (INT in Evry, 10 miles south of Paris)

Together, these three colleges offer eight “Master of Science” programs in different aspects of telecommunications technology, ranging from “Electrical Engineering,” “Computer Science,” “Integrated Circuit Design” and “Optical Communication Networks” to “Multimedia Networks” and “Spacecraft Technology”. (See web-site at: <http://www.get-telecom.fr>).

The programs are open to any student who already possesses a 4-year “Bachelor”-type degree in a subject related to the course which they may choose in France. The main features of these M.Sc. courses are:

- **Duration** : 18 months/3 semesters, with semesters one and two taking place within each college, while the third semester takes the form of a paid project in French industry.
- **Language** : 3 of the 8 courses take place entirely in English, although French courses are provided to enable the students to survive in a French environment. The other 5 courses use English as the language of instruction for the first semester and then move over to French as from the second semester. (The French language is taught intensively during the first semester).
- **Tuition fees** : Each course costs 10,000 Euros, excluding accommodation and meals.
- **Project work** : The project work during the 3rd semester takes place in French industry and is remunerated at the rate of 1,000 Euros per month X 6 months = 6,000 Euros.
- **Degree** : “Master of Science” from the “Groupe des Ecoles des Télécommunications”.

These M.Sc. programs only began in the academic year 2002-03 and so still have to prove themselves.

Conclusions

- The 2-year “n+i” programs leading to the nationally-recognised degree of “Diplôme d’Ingénieur” are about to enter their 4th year and seem to indicate that students from different cultures can come together in France and adapt relatively successfully to the local environment and to the French language. The course-work is extremely intensive (25h of timetabled contact hours every week + a similar amount of personal work) and involves complete integration of the international students with their French counterparts. For the foreseeable future, the major obstacle is likely to remain the mastery of the French language by the international students.
- The eight new “Master of Science” programs, which have just begun in the three French Graduate Colleges of Telecommunications Technologies, will be a difficult test of our organisational, teaching and management skills. On the language front, I anticipate that all of these programs will drop French over the next two years and use English as the language of instruction. If this is the case, it will represent a huge change in the mentality of the French, who, for many decades, have been defending their language tooth and nail in the face of the onslaught from English.
- Organising “Masters” courses in English also represents an opportunity for earning extra income through tuition fees. Traditionally, tuition fees in the Engineering Colleges in France have been extremely low (about 1,000 Euros per year) since the right to a good education has been seen by the French as something untouchable, which must not be governed by sordid details such as parental income. This is likely to change in the very near future!
- In the future, the author is convinced that the “n+i” and “Master of Science” programs will become increasingly competitive with each other. Their objectives are different, since the former provides a wide-ranging engineering education in many aspects of IC technology, whereas the latter are very much more specialized in one particular field.

Reference : Figure 1. Inspired from “Comité d’Etudes sur les Formations d’Ingénieurs” (CEFI). URL: <http://www.cefi.org/ENGLISH>

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