

A study of the impact of digitalization on engineering education institutions in France

AM JOLLY-Commission des Titres d'Ingénieur-Paris

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CTI , the accreditation agency for Engineering Education in France wanted to know the level and impact of digitalization in the HEIs ,why?

-Because our criteria must take into account what happens in institutions (ENQA rule)

-It is necessary to share information between institutions

-Because in fields such as biology, agronomy or biology engineering, some pupils and parents think that they are not concerned by digitalization

•-Our experts need references on the subject



Accreditation is a periodic process: each 5 year, an institution must realize a SER (geographic rules), 45 of them in 2019

Institutions think that they spend too much time for accreditation processes

So it was necessary for CTI to get the information needed to add something to the accreditation process: a focus on this specific subject

So it is not at all a statistic enquiry, but there is no reason for a region to have different results than another one

The idea was to get data not only concerning courses but also on the organization of the institution, on employment..

4 pages were asked but some institutions made 32 pages...so it was difficult to realize an analysis but we could obtain trends

4 parts in the survey

- Pedagogic innovations in link with digital

This includes particularly distance learning

- Content of the curricula

For curricula linked to digitalization and for others

- Changes in the organizations

- Changes in the jobs that graduates (will) occupy

- Global evaluation by the institution on themselves



On pedagogic innovations

- Many call for projects were launched previously internationally, by the state, by regions
- We discovered that site effect exists: in Toulouse or Lyon for example, private or public institutions work together and a dynamic has been created
- Distance learning was not integrated in our evaluation criteria, however we discovered that many institutions used it either for continuing education or new fresh students or prevented students, using Moodle or more sophisticated platforms



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- MOOCs are realized by institution or its students or group of institutions or at a national level, depending of the level of devices owned by the institution
 - Many institutions or group of institutions have a pedagogic engineer to help their teachers
 - Learning analytics are of real interest for French schools
 - Use of portfolios for evaluation of learning outcomes is developing
 - Use of virtual reality and digitalization of labs are used by few schools



Content of the programs

A general trend is to turn engineers to data scientists

Cybersecurity, IoT, big Data and at a smaller level AI and Machine Learning are the major preoccupation of programs in the field of digitalization

For other ones: tools of modelling or simulation are the most developed in every institution but also BIM, Factory of the Future, Bioinformatics, Geographic information system, Cyber physic systems

Life sciences have drastically changed their teachings



Concerning the organization and management of the institution

Difficulties to find the good management software in great size institutions

Many various initiatives for skills, recruitment , alumni

Difficulties to find good indicators for measuring student and staff satisfaction on digitalization

GDPR is still a real problem for institutions



Concerning evolution of jobs

Many offers on system security and data analytics, but also Chief Digital Officer to manage the digital transformation

Many institutions have set a council for prospective

Conclusion of institution

Lack of indicators to measure apprenticeship

Necessity to change the state of mind of staff and teachers



Conclusion for our agency

Covid made plans change especially concerning distance learning

CTI particularly followed satisfaction of students (BNEI) during the crisis

The focus seemed to tell us that everything was OK but in reality many things are still to be done!

But institutions have really understood the importance of digital revolution

Pedagogic science is more and more necessary together with digitalization!

