

The Digital University Agreen U

How to Build an Innovative Knowledge Sharing and Learning Project in Agribiosciences? Case Study

Caroline Martin^(✉), Camille Hervé, and Philippe Prévost

Agreenium, l'institut agronomique, vétérinaire et forestier de France, Paris, France
{caroline.martin, camille.herve, philippe.prevost}@agreenium.fr

Abstract. The Agronomic, Veterinary and Forestry Institute of France (Agreenium), representing eighteen French public research and higher education institutions in Agribiosciences decided to create a unique portal to the digital university in Agribiosciences, agreen U (<https://agreenium.fr/accueil>). Its objective is to encourage digital education in this sector to accompany the evolution of teaching practices but also contribute to the strengthening of the international visibility of French research and higher agricultural and veterinary education, and to develop the international attractiveness of the French training offer in the scope of Agribiosciences. The paper explores the identification of functional specifications necessary to attract learners in a such e-learning ecosystem by an international comparative analysis of fifteen universities and institutes and their online courses offers. The paper concludes that we can propose a framework of the functional specifications dedicated of an e-learning project.

Keywords: Agribioscience · Digital university · Functional specifications
e-learning · Open education

1 Introduction

In France, online education and e-learning are only developing. Recent official reports recommend that e-learning and online training should be supported in public education, higher education and professional training. Online education is seen as a mean to support the economy, offers better opportunities and access to education to young generations, promotes and support lifelong training, and develops the European and international dimension of the French higher education and research system. The French government has recently provided funds to education and research institutions to support online education projects as stated in Refs. [1, 2].

On the other hand, France plays a very important role in the international trade of agri-food products and the French research in Agribioscience benefits from a good international visibility in this field. And in fact, the French offer in terms of e-learning in Agribioscience is almost absent on the Web.

In 2015, the government created Agreenium - the Agronomic, Veterinary and Forestry Institute of France - a structure that federates the eighteen main institutions of research and higher education in Agribioscience.

Agreenium decided to launch a unique portal for the education amongst its members: the online university in Agribiosciences, agreen U (<https://agreenium.fr/u/accueil>). Its objective is to encourage digital education in this sector to accompany the evolution of teaching practices but also contribute to the strengthening of the international visibility of research and higher agricultural and veterinary education in France, and to develop the international attractiveness of the French training offer in the scope of Agribiosciences.

In this short paper, we have concentrated our reflexion on how we have built the functional specifications for such a project from a comparative analysis of the e-learning offers around the world, in order to clear a methodology which can be able to equip an e-learning project.

2 Materials and Methods

2.1 The Set of Examples

The comparative study has been done on selected top educational institutions in Agribiosciences (Davis, Wisconsin, Laval, Wageningen,...) from two official ranking lists

Table 1. List of selected universities

Rank	Name of the university
1	Davis University
2	University of Wisconsin Madison
3	University of California, Berkeley (UCB)
4	Wageningen WUR
5	AgroParisTech
6	Institut Mines Telecom
7	COMUE example of Paris-Saclay
8	Cornwell University
9	Université de Laval (Québec)
10	ETH Zurich
11	University of Reading
12	University de Strasbourg (UNISTRA)
13	Agropolis
14	University of Florida
15	Paris Sciences Lettres (PSL)
16	Ecole polytechnique fédérale de Lausanne (EPFL)
17	University of Tokyo
18	Boston University
19	Arizona State University

[3, 4], and others universities which are a complete strategy about the e-learning development (Institut Mines Télécom, UNISTRA, EPFL).

The objectives of the study is to identify international actors of the sector of digital training and education, and evaluate the level of progress of Agreeenium's international competitors in terms of online training offer and promotion. This study would allow to identify strategies, offers and good practices. The analysis methodology focused on websites and platforms of selected universities to evaluate the online ecosystem, the training offer and users' experience.

Fifteen examples of e-learning offer from the universities (see Table 1). We have selected French but also others international universities or education organisation in the domain of Agribiosciences but not only. In fact, the example of Mines Telecoms institute, a major engineers' school in France and in Europe is presented because his action plan in the e-learning and its promotion is very significant.

2.2 The Methodology of Data Gathering

Many academic publications deal with the conditions of satisfaction of students about the online courses. Some results show institutions how to improve learner satisfaction and further strengthen their e-Learning implementation [5]. Several criteria of the positive opinions learners are identified for example the flexibility, the content elements enhancing their motivation, (3) the ability to communicate easily with the instructor, instant feedback, and access to the course materials easily as stated Ref. [6]. The conditions of attractiveness of the offer of online courses for students don't seem to be a priority for analysis. However, it determines a significant part of the success of them and their attractiveness [7].

We have tried to demonstrate how the different e-learning platforms have built their success as well as on the "content" and the "container" and develop strategy of promotion to attract learners. The data collection has been done from the examination of the different websites of the platforms. We distinguish different criteria (see Table 2) below to characterize the attractiveness of an e-learning platform, which are weighted. The weighting was determined according to the importance attached to certain criteria by the steering committee Agreeenium members regarding e-learning project in the field of agribiosciences. For example, the weight of the "MOOC number" criterion in this area is heavier than the "number of online courses" criterion in other areas.

Table 2. Criteria's list of selection for the comparative analysis

<p>NUMBER OF PROPOSED ONLINE TRAINING</p> <p>Number of MOOC (Agro BioSciences theme) (coef2)</p> <p>Number of online Master (Agri BioSciences theme) (coef2)</p> <p>Number of professional certificates (Agri BioSciences theme) (coef2)</p> <p>Number of other on-line training courses (Agri BioSciences theme) (coef1)</p> <p>Number of online courses (All themes) (coef3)</p> <p>IMPORTANCE FOR ONLINE TRAINING ON THE WEB SITE OF THE ENTITY</p> <p>Presence in the main menu (coef2)</p> <p>Presence in the sub-menu (coef2)</p> <p>Presence in home page (coef3)</p> <p>Number of dedicated pages (coef2)</p> <p>Mention of programs under development? (Coef1)</p> <p>QUALITY OF ELEMENTS INSTALLED TO CONVINC</p> <p>Existence of an "online training" category (coef2)</p> <p>Existence of a "guidance system" in online training (coef1)</p> <p>Presentation of the training (teachers, what you will learn,...) (coef1)</p> <p>Accessible online training extract (coef1)</p> <p>Contact: Access to an online chat / Contact button (coef1)</p> <p>Testimonials (coef1)</p> <p>Applynowbutton / Requestinfo (coef1)</p> <p>Questions and answers (coef1)</p> <p>Existence of elements to convince the relevance of online training (coef3)</p>

3 Results and Discussion

3.1 What Does the Mapping of the Online Courses Offer Say?

The study have been led to identify leader platforms for users' experience and the promotion of the online training offer. The proposed mapping is discriminant (see Fig. 1). University of Florida dominates the ranking in terms of number of online courses with the exception of the Institut Mines Télécoms, the French entities studied do not present on-line training courses (Agropolis - 1 MOOC only). Wageningen and the University of Laval (Québec) are distinguished by the importance given on their website to the different online courses. Davis University and the Institute of Mines Télécom (with the information present on FUN) are present by the quality of the information available to convince students. American universities seem to be ahead of their European counterparts about the quality of information provided to be attractive (but not necessarily on the importance given to digital training). The cartography underlines the good balance achieved by Wageningen and the Institute of Mines Télécom. These institutions represent a good synthesis between the rich offer of online courses and the promotion of it, and the commitment of the learners, by a building student engagement and belonging.

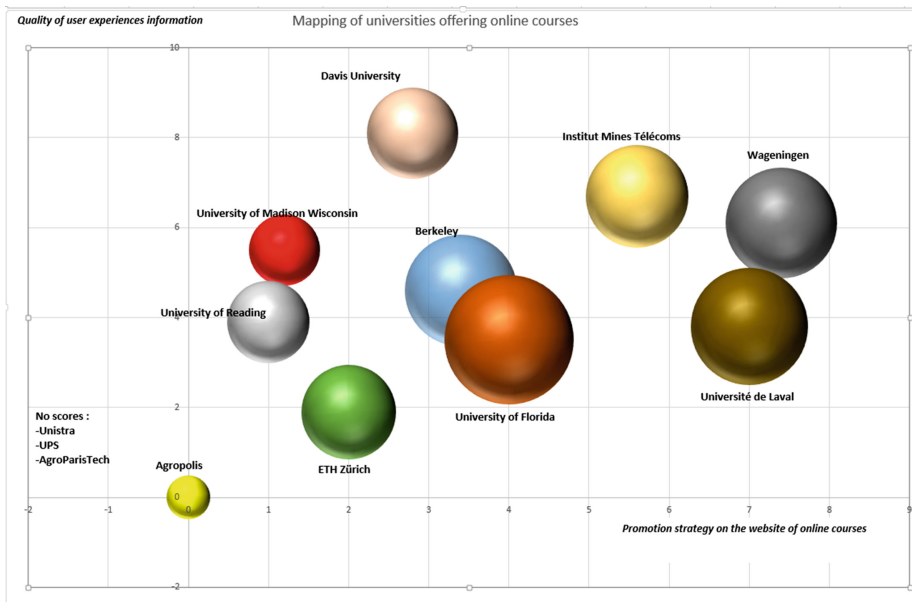


Fig. 1. Mapping of universities offering online courses

3.2 Functional Translation for the Project of the Digital University Agreen U

From this comparative analysis of online course sites, we were able to identify main functionalities for Agreen U project. The different good practices represent a model of simple functional specifications for a project of e-learning. If we propose a synthesis, the tree structure appears as very important for the information structuration and its analysis shows a clear way of identification and representation of online training versus “traditional” education, in the best sites, a section specifically dedicated to research exits. For the users/learners, the ergonomics of the website to work on the online courses is very important so in the best propositions, clear navigation, short main menu, image navigation seems to propose a real added value with a coherent use of rich media (videos...). As well, the good practices show different aspects of interactivity with the possibility of the courses ‘customisation, the chat and hot line and the previews of trainings. Finally, one last of these good practices to attract learners is the commitment with the possibility of commenting on courses between learners and with teachers and the sharing of functions. These features are described below.

A clear presentation of the learning ecosystem of the project.

This ecosystem must be simple, complete and showing the international action of Agreenium with interactive mapping for example and present the different actions of each member of Agreenium which represents the rich resource of the consortium in agribiosciences.

Easy access of Agreenium resources.

The main functionality must be the use of the same access codes for the all resources and online spaces of the ecosystem Agreen U.

The community management option.

Open or closed forums with the management of member’s profiles are necessary to propose an added value for the learners and teachers. These functionalities are Chat, mailing list, social networks, and groups of discussion.

Mapping and data visualising.

The Agreen U project must provide maps and data visualising system showing all students and the work progress, their research subjects, maps by countries, themes, or skills, and courses.

News services.

The service must make it possible to identify all the relevant news for the user according to his profile by a recommendation system.

Customization services.

The customization of courses and contents allows the navigation by profile including tracking tools to feed the customer relationship management system.

4 Conclusion

4.1 The Functional Specifications Answering to the Expectations of Agreenium

Online education is seen as an important opportunity and meets high expectations from member institutions of Agreenium. However, these institutions often lack resources, skills or funds to develop projects. Agreenium is seen to have an important role in developing online projects, and bringing skills and international visibility.

This analysis is a work in progress and did not considered other important criteria, such as number of users (students) per year, per month, per day of studied examples. This choice is led by the members of Agreenium convinced by the project of agreeen U is a good digital project for cooperation between all of them. The first steps of the project was focused on the international offer in e-learning in terms of system of specifications and not in terms of use. However, the study results about the e-learning as stated in Ref. [8] revealed principles and modalities for achievement of agronomic education. Students are involved in teaching and learning and teachers became their real partners in an interactive educational environment.

The expectations for Agreenium about the ecosystem agreeen U are:

- Associate the skills amongst its 18 members to work together on common projects,
- Support the development of online education and distance learning,
- Provide tools and processes for cooperation and experience sharing.

With the analysis, the Mines Télécoms Institute develops similar missions to those of Agreenium in a different field. His example shows that a competitive training offer on the Web is possible in France. So, we have been able to propose a model of simple functional specifications for a project of e-learning able to answer to the expectations and requirements of Agreenium and, other organization which would like to launch such project.

4.2 Outcomes and Perspective

The main outcome consist to the online digital university agreeen U which represent an integrated platform of e-learning, resources and community management (see Fig. 2) launch in February 2017. The agreeen U strategy will be able to answer to the following issue: matching needs and service proposals. The next steps of this study is to analyse the users and their behavior concerning agreeen U resources in comparison with others European and international e-learning systems. That is crucial for the development of agreeen U. The online university should be able to propose innovative services in order to stay attractive for the Agribiosciences communities and beyond, after the attractive launch.

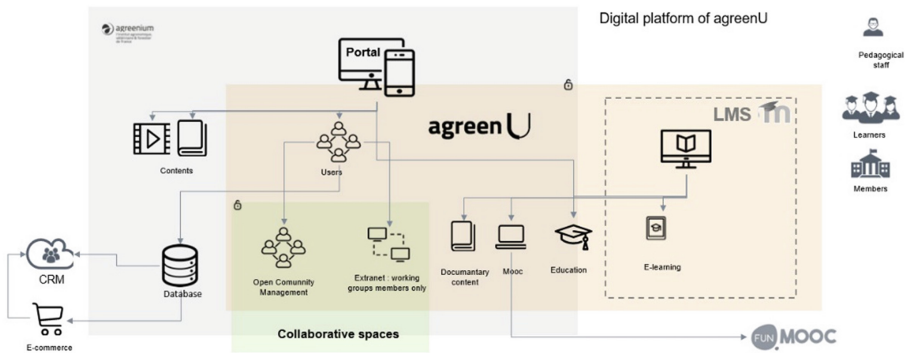


Fig. 2. The learning ecosystem of agreen U portal (<https://agreenium.fr/u/accueil>)

Acknowledgment. The authors would like to thank Nexize Company, who contributed to build this project and to gather the data that gave rise to this study.

References

1. Bejean, S., Monthuvert, B.: Pour une société apprenante - propositions pour une stratégie nationale de l'enseignement supérieur (2015). http://cache.media.enseignementsup-recherche.gouv.fr/file/STRANES/12/2/STRANES_entier_bd_461122.pdf
2. Conseil National du Numérique, Université numérique: du temps des explorateurs à celui de la transformation. Avis (2016). https://cnnumerique.fr/wp-content/uploads/2016/05/CNNum_Avis2016-1_ESR-4.pdf
3. QS World University Rankings by Subject - Agriculture & Forestry, Lists of university ranking (2016). <http://www.topuniversities.com/university-rankings/university-subject-rankings/2016/agriculture-forestry>
4. Pop, A.: 10 U.S. Universities Offering Top Distance Education (2016). <http://www.mastersportal.eu/articles/1307/10-us-universities-offering-top-distance-education.html>
5. Sun, P.-C., Tsai, R.J., Finger, G., Chen, Y.-Y., Yeh, D.: What drives a successful e-learning? An empirical investigation of the critical factors influencing learner satisfaction. *Comput. Edu.* **50**, 1183–1202 (2008)
6. Durak, G., Ataizi, M.: Learner views about a distance education course. *Contemp. Edu. Technol.* **7**(1), 85–105 (2016)
7. Bagher, M., Sibbald, A.: Dilemmas facing universities in implementing online learning programmes. In: Proceedings of the 11th International Conference on e-Learning, ICEL 2016, pp. 13–20 (2016)
8. Roman, I.: Development of agronomic education by student-centred learning. In: The 6th International Conference Edu World 2014 "Education Facing Contemporary World Issues", 7–9 November 2014, Procedia - Social and Behavioral Sciences, vol. 180, pp. 441–447 (2015)