



State of the art of e-learning in Belgium

by

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In Belgium, the development of the e-learning knew a notable evolution since the beginning of the years 2000, under the impulse of several public funding, of regional, national or European origin. The large universities of the country have all internal teams in charge of stimulating and adapting existing course to e-learning platforms; some of them have even created innovating platforms now used worldwide; others play an important part in the definition of public policies related to e-learning use, especially concerning training for the unemployed and workers in activity. Common research projects, carried on by public authorities and research centres aim at exploring specific dimensions of e-learning practices, such as the motivation of the participants to continue a course, barriers to the adoption, etc., and to draw some the conclusions useful for the general diffusion of the tools.

Being given this wide role of the universities in the development of the e-learning in Belgium, and the fact that e-learning, by definition, is crossing usual organisational borders, this report will follow the following structure. In a first part, we will describe current uses of e-learning infrastructures in Belgian universities. We will also indicate the more particular research orientations of the several research centres working on learning and technology issues. In the second part, we will highlight the part played by the extra-educational authorities dealing with professional training, and the collaborations tied with the universities on this matter. Lastly, in the third part, the question of the uses of e-learning by private companies, the identification of the main economics actors, and the development of a specialised workforce, as well as future prospects for evolution will be outlined.

1. E-learning practices in the universities

The Belgian university context is characterized by the presence of some large universities known as “complete”, organising teaching and research about the all range of scientific disciplines, and of a whole set of university institutions of more reduced size, often organized around some faculties. Since the reform of Bologna, these universities gathered in *Academies*. In the French-speaking part of the country, the 9 universities gathered in three academies, federating institutions of higher education and university around the three large complete universities (in italic):

- The “Wallonia-Brussels Academy”, gathering the *Free University of Brussels*, the Polytechnic Faculty of Mons (FPM) and the University of Mons-Hainaut (UMH);
- The “Wallonia-Europe Academy”, gathering the *University of Liege* and the University Faculty of Agronomic Sciences of Gembloux;
- The “Louvain Academy”, gathering the *Catholic University of Leuven*, the University Faculties ND of the Peace of Namur (FUNDP), the Catholic University Faculties of Mons (FUCAM) and the University Faculties St Louis (FUSL).

The Dutch-speaking part of Belgium counts 6 universities, that is to say:

- Katholieke Universiteit Brussel (K.U.Brussel);
- Katholieke Universiteit Leuven (K.U.Leuven);
- Universiteit Antwerpen (UA);
- Universiteit Race (UGent);
- Universiteit Hasselt (UHasselt);
- Vrije Universiteit Brussel (VUB).

A rapid overview of the activity as regards e-learning practices gives the following data:

University ¹	No. of students (2005)	Name of the virtual campus	Platform used	A number of courses
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¹Basic statistical data of the CREF (the Council of the Vice-chancellors of the French-speaking universities of Belgium), at December 1, 2005 (academic year 2005-2006), http://www.cref.be/Stat_base.htm ; B.S.T. *Beperkte statistische telling van of studenten in het hoger onderwijs COP 31 oktober 2005. Academiejaar 2005-2006*, Agentschap voor Hoger Onderwijs in Volwassenenonderwijs, 56 p., Dec. 2005.

Free University Brussels	19.762	Virtual university	WebCT	220
University of Liege	14.831	E-agora	WebCT	180
Catholic University of Leuven	20.640	iCampus	Claroline	2.337
University faculties ND of Peace – Namur	4.287	Webcampus	Claroline	647
University of Mons-Hainaut	2.806	e-learning	Moodle	107
University faculty of Agronomic Sciences of Gembloux	971	E-agora	WebCT	
Polytechnic faculty of Mons	971		Moddle	190
University faculties St Louis	1.566	iFUSL	Claroline	120
Catholic University faculties of Mons	1.129	iCampus	Claroline	.
Vrije Universiteit Brussels	6.820	Pointcarré	Dokeos	
Katholiek Universiteit Brussels	317		<i>n.a.</i>	
Universiteit Hasselt	1.292		Blackboard	
Universiteit Antwerpen	7.317	Delta	Blackboard	
Katholiek Universiteit Leuven	22.521	Toledo	Blackboard	1.500
Universiteit Race	21.032	Minerva	Dokeos	3.800

The table above indicates the very differentiated uses of e-learning between institutions, reflecting both particular internal dynamics, and choices of platforms and, therefore, training strategies. So as underlined in a report worked out by LabSET of the University of Liege (2006), it is difficult to concretely appreciate the reality of the use of the e-learning in Belgium, being given, on the one hand, the unequal quality of information available, and on the other hand, the multiple definitions of what constitutes an e-learning activity.

A thorough glance on the activity of the research centers specialized on education and training technologies makes it possible to appreciate the orientations privileged by the universities as regards strategy of e-learning. The majority contribute to the general reflection, by choosing – and profiting from – diversified means.

- IPM (UCL): an activity of research and development as regards e-learning

Within the “Louvain Academy”, the Institute for Pedagogy and the Multimedia (IPM) played a driving part either in the development of research on pedagogy, but also in the translation of

pedagogical concepts into the development of an e-learning platform, called “Claroline”. Created in 1995, this IPM aims at contributing to the valorisation of the teaching function within the university. Its activities relate to training to the teachers while placing at their disposal of the resources useful to their activity. In this optics, the IPM coordinates, animates, diffuse teaching initiatives, in particular based on communication and information technologies. The work of this research center thus brought to consider the establishment of solutions of e-learning to the UCL. The solution considered initially, the proprietary software WebCT, proved, after a few years of attempts of implementation, inadequate to meet at the same time the request and the existing practices of the teachers, as well as the privileged teaching principles. Very quickly, the development of alternative complementary solutions were required by academics. These technical solutions rest on the use of open source software, freely available and easily modifiable to meet the expressed needs. The fitting of software and “pieces of code”, allowed, gradually, the development of a new solution, particularly adapted at the requests of the users. The “top-down” vision of the proprietary platform, implied a kind of “one best way” of setting up online course and organising the teaching practice ; this supposed also pre-existing training for the teachers, restriction of possible choices, a certain number of rigidities, and then a necessary adaptation of the teacher to the platform philosophy. These sources of rigidities leaves room to a more incremental online course development, empirically located, based on the existing uses of the teachers. After a few times, the platform of e-learning build up by IPM from the aggregation of those “pieces of code”, and *ad hoc* solutions to teacher needs, takes the identity of a software, named Claroline, freely available for any user and institution. This opening will involve the mutualisation of the later developments of the software, through the collaboration of multiple developers and the return of experiences, bugs, requests of thousands of users worldwide. Now Claroline is used in more than 80 countries and translated in more than 30 languages.

In addition to this research and development activity, the IPM is also developing training program about the use of technology in education, for the internal personnel of the UCL, carried out remotely and in house. This program is organised on a 1 year basis, first by putting participants (approximately 20/year) in the situation of learning, then, thereafter, helping them to develop their own on line course.

Relevant links :

<http://www.claroline.org>

<http://www.ipm.ucl.ac.be/>

Lebrun, M. (2005), *eLearning pour enseigner et apprendre*, Louvain-la-Neuve : Academia-Bruylant.

Lebrun, M. (2002), *Des technologies pour enseigner et apprendre*, Bruxelles : De Boeck.

Lebrun, M. (2002), *Théories et méthodes pédagogiques pour enseigner et apprendre*, Bruxelles : De Boeck.

Involvement in international networks of research:

ENSeL: Engaging Networks for Sustainable eLearning:

<http://www.enselproject.org>

EQUEL: e-quality in e-learning:

<http://www.equel.net>

RECRE@SUP:

<http://tecfa.unige.ch/proj/recreasup/welcome.php>

<http://www.ipm.ucl.ac.be/UniversiteEte/>

LEARN-NETT:

<http://tecfa.unige.ch/proj/learnett>

<http://www.icampus.ucl.ac.be/LN2004>

- The “Formadis” project (LabSET-ULg; CTE-ULB): to accompany the transition towards the e-learning

Within the “Wallonia – Europe Academy”, gathering the University of Liege and the Agronomic Faculty of Science of Gembloux, the Laboratory LabSET – Laboratory of Support for Teaching by Telematics – has an important role of organization and development of distant teaching. Its activities are addressed to the members of the university of Liege and the academy, by the management of the technical infrastructure and the development of a whole range of services such as forums of university pedagogy, examples of good teaching practices, complementary bonds and resources. But LabSET also constitutes an international center of expertise, proposing consultancy and evaluation missions. In collaboration with the CTE – Center for Technologies to the service of Teaching – of the Free University of Brussels, LabSET coordinates the project “Formadis”, financed by the European Social Fund, the Walloon public authority and the French-speaking Community of Belgium, since 2001. This project consists in accompanying organizations, selected by call to projects, in setting up

their own online training. A technological platform and teaching support tailored to specific needs are provided. The objective is to make participating organizations autonomous in the production and the management of their e-learning strategies and practices, and so, by an action leverage, to support the fast development of a French-speaking Belgian offer with high quality standards.

This project functions on the basis of annual call for projects, and targets federations of companies, administrations, Centers of competence, organizations of socio-professional insertion, institutions of higher education, training centers. A dozen projects on average are retained each year. Those must lead to the realization of a course on line of approximately 30 hours. The organizations profit then from a methodological support, formations, of assistance, evaluation of the practices.

Relevant links:

<http://www.labset.net/>

<http://www.labset.net/formadis/>

<http://www.ulb.ac.be/ulb/cte/>

- STE-CRIFA : Form@hetice: train the teacher to ICT for Education

The STE-CRIFA (Service of Technology of the Education of the University of Liege - Research center on the Instrumentation, the Formation and the Training), is a research center which, in addition to its work relating to analysing training processes related to ICT, developed an offer of continued training of university level intended to train specialists as regards technology in remote education. In collaboration with University Faculties ND of the Peace of Namur, a Diploma of higher studies (3rd cycle) in Technology of Education and Training was organized from academic year 2000-2001 till 2005-2006. This 180 hours master degree has been followed by some 20 students each year. Since the academic year 2002-2003, In collaboration with LabSET, they also coordonates a new Master in Master in Pedagogy of the Higher education, called "Formasup".

Relevant links:

<http://www.stecrifa.ulg.ac.be/formahetice/>

<http://www.det.fundp.ac.be/destef/>

- Research in pedagogy translated in specific technical developments

Contributing to the development of e-learning is also very present in other universities, such that of Universiteit van Gent and Vrije Universiteit Brussels which collaborate very narrowly in the development of the open source e-learning platform called “Dokeos”. This platform has been based initially on the Claroline source code but is now having its own way. The Dokeos solution is currently used in many institutions, and is controlled at the present time by a private company based in Brussels. The software is targeted either to university and high schools uses but also other diversified customers (administrations, companies, projects, etc). The ICT&O center of Universiteit van Gent, in collaboration with the Hogeschool Gent currently take in charge different projects, of fundamental and applied nature, related to the on line evaluation of learners (pretests, tests, examinations, investigations, etc). These teams developed a software, named “Curios”, distributed under open source license, and particularly integrated into the Dokeos platform. Other teams of the Vrije Universiteit Brussels currently direct their work towards the questions of licenses of use of the contents.

In addition, the *Research center on hypermedia and databases* of the Katholieke Universiteit Leuven was particularly implied in the development of international standards as regards to e-learning, such as SCORM, through the coordination of the European project Ariadne.

Relevant links:

<http://www.dokeos.com>

<http://icto.ugent.be/>

<http://www.curios.be/>

<http://www.cs.kuleuven.be/~hmdb/joomla/>

<http://www.ariadne-eu.org/>

- An online campus which transcends traditional borders: the virtual campus in management

Lastly, the development of a virtual campus in management is interesting to underline as an original initiative, being given its “transborder” character. Funded by the European Social Fund, and the Walloon public authority, this virtual campus aims to share courses being

developed by three large Belgian business schools, belonging to 3 universities, that is to say the Institute of Administration and Management of the Catholic University of Leuven, the Solvay Business School of the Free University Brussels, and the HEC-School of management of the University of Liege. The objective is the pooling of means and competences, with principal destination the students of these three institutions. However, the campus is also open to external actors, such as companies or private people. The relationship established between several actors from the education world, as well as some contents coming from public agencies, towards several kinds of users (students, adults, companies, etc) constitutes a particular feature of this project, and testifies to the capacities of decompartmentalization allowed by the e-learning. This virtual campus uses the Claroline solution.

Relevant links :

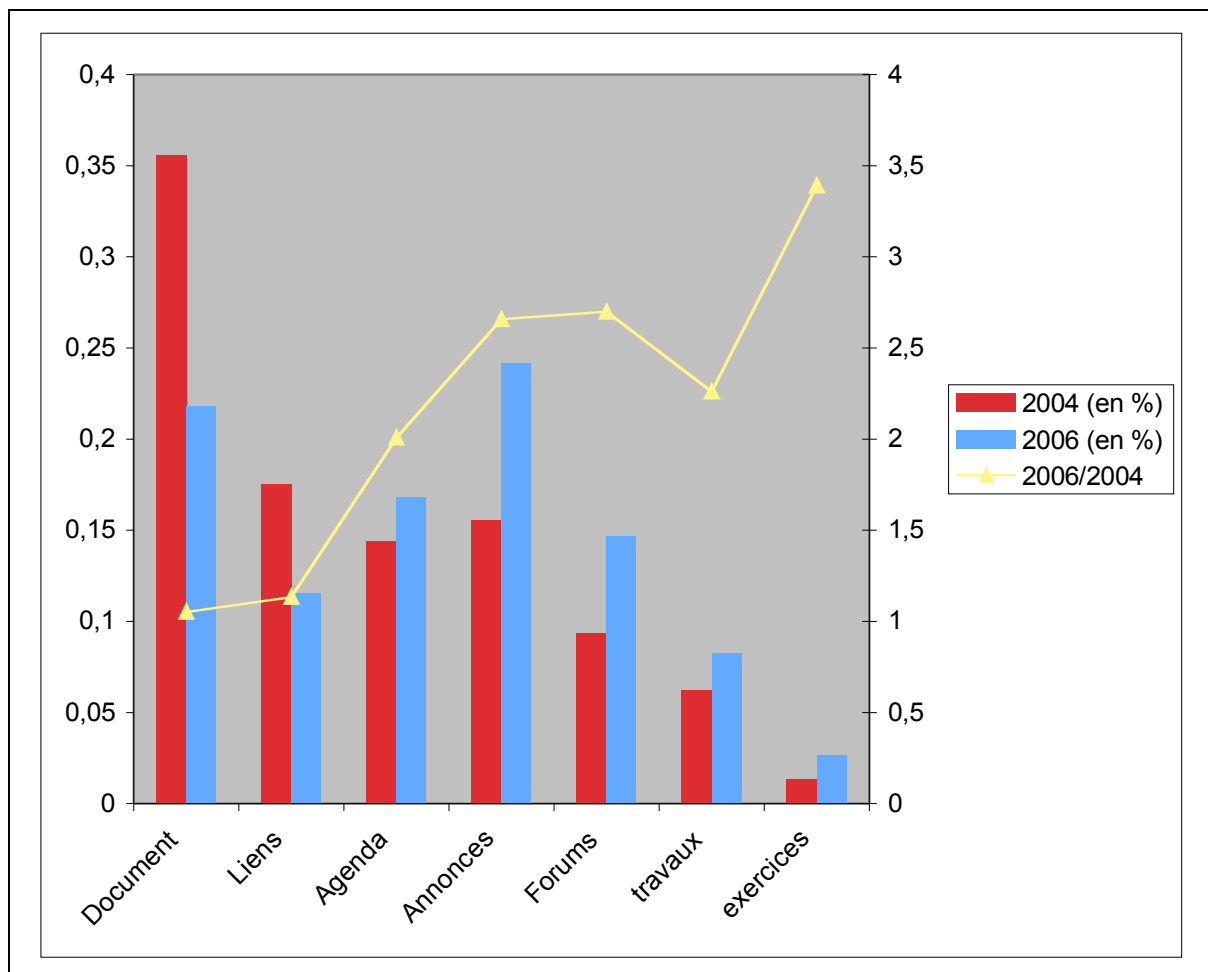
<http://www.campusvirtuel.be/>

- Evolution of the uses: 10 years of e-learning practice at the UCL

The use of the e-learning at the UCL has been analysed several times, and been published in various scientific articles and books. For Lebrun (2000, Lebrun and Laloux, 1999), the first years (1995-2000) of the virtual campus were characterized by the prevalence of the poles “Information” (syllabus, complements iconographic, references to Web sites, etc), and “Interactions” (tools of communication, e-mail, forums, chat, etc) of the teaching relation. From 2000, the failure of the deployment of the WebCT platform and the development of Claroline on bases of modularity, flexibility, opening and transferability, allowed the massive deployment of the iCampus. This exponential deployment is necessarily related to the teaching philosophy underlying the functionalities of the software. Unlike the “historical” software of e-learning, directly or indirectly inspired by a training thoriented towards a specific training theory, the will was to develop a tool characterized by a great neutrality. Optics was thus not to suggest a teaching “one best way”, not to guide teachers towards “a good method”, but to let them express their own orientations and ways of considering their e-learning strategies and practices. A principle of variety was defended: variety of training course scenarios, variety of the disciplines, the methods, public and the temperaments; variety of the teachers, the profiles of training. The guideline was to stimulate e-learning practices from emergent uses and ideas, rather than to engage the teachers in learning paths. Strongly

anchored on the empirical practices, this approach – which one can describe as socio-constructivist – consists in providing an initial access to technologies, which supposes simplicity, user-friendliness, easy appropriation, before formulating requirements for quality. Thus, other teaching poles complementary to “Information” and “the Interaction” are caused by the use of Claroline: they are the “Activities” and “Production” poles which make it possible to the students to divide, to analyze, to criticize their work.

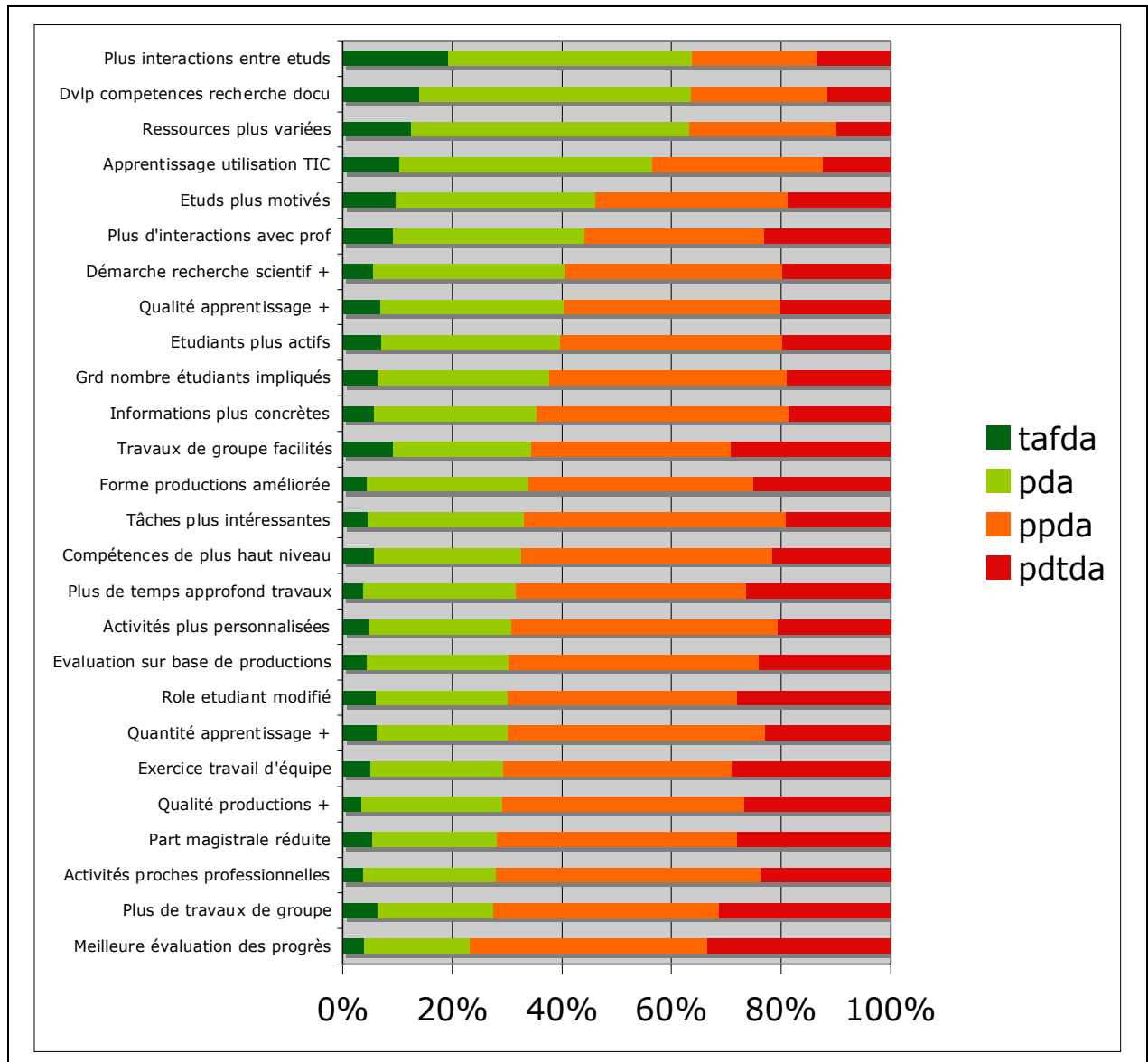
The progressive shift from “transmissive” forms of teaching towards more “participative” ones has developed gradually. The figure below shows the use of the tools of Claroline for two different periods (March 2004/February 2006), and provides the uses of the various expressed tools in percentage. It is noticed that dominant “transmissive” tools, such as “Documents” or “Links”, is maintained, but bends in front of more participative tools, such as “Announcements”, “Work”, “Forums”, “Exercises”.



In addition, the yellow curb represents the absolute increase between the two periods by tool used; this one is on average of a factor 2, which also represents the increase in the number of courses put in line which doubled over the studied period. One also notes an absolute stagnation of the “documents” and “Links” (*Liens*) compared to the increase in the other tools proposed by the platform. This indicates consequently the slow progression of the uses towards more active and interactive forms.

Tools	2004 (in %)	2006 (in %)	2006/2004
Document	36	22	1,05
Links (<i>Liens</i>)	18	12	1,13
Diary (<i>Agenda</i>)	14	17	2,01
Advertisements (<i>Annonces</i>)	16	24	2,66
Forums	9	15	2,70
Work (<i>travaux</i>)	6	8	2,26
Exercises	1	3	3,39
TOTAL	100	100	

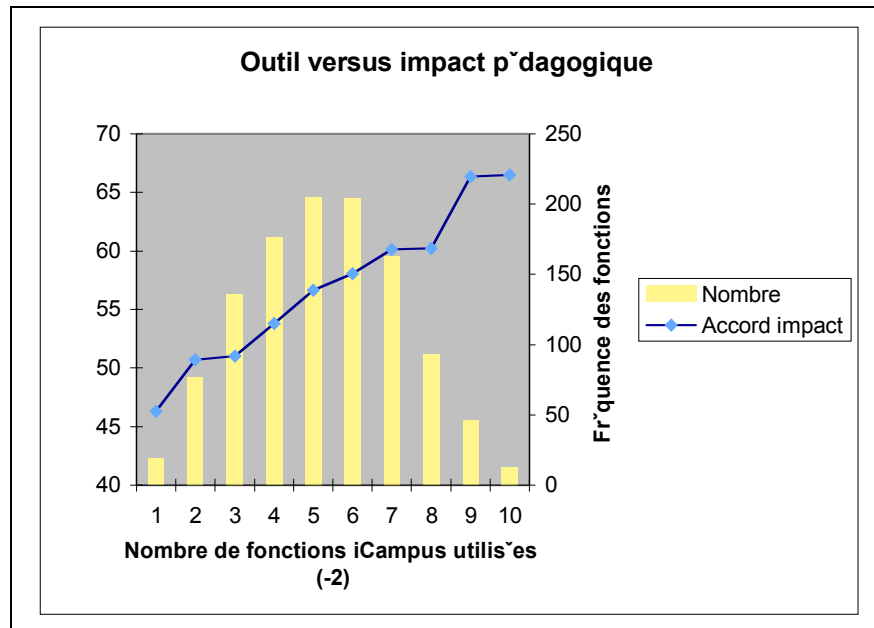
An investigation carried out with voluntary students (n=1179) using iCampus, and bearing into the evaluation of the value of the platform, indicates the following answers to the question “Compared to a course where the professor does not use iCampus, how do you agree with the following changes: ”



If the average agreement with the proposals given is only 38% (addition of the answers tafda – *completely agree* - and pda – *rather agree*), the strongest agreements relate to the items relating to interaction tools or the development of personal competences. If one couples the answers obtained with the use of the platform, appreciated here by the frequency of the number of tools used, one notes that:

- the number of functionalities (in histogram) used (or known by the students) on iCampus is generally at least 3 and on the average 7 to 8;
- the left side of Gaussian curb (low value) is especially characterized by the massive presence of transmissive tools ; the right side of Gaussian curb (high value) is characterized by uses of tools supporting the activity or the interactivity of the students;

- the appreciation of the students (4 points for “completely agree”, 1 point for “don’t agree at all”) is represented by the increasing function (the blue line).



2. The e-learning in the public professional training

If the e-learning forms now part of the life of all the Belgian universities, this mode of training also gradually penetrated the activity of other training operators, such as the organizations of vocational training. Those are often helped by the university research centers to develop their strategies, to conceive and coordinate projects, to provide support in the development of contents.

The principal actors on the matter are the public organizations in charge of training for the unemployed. The practice of self-tuition indeed constitutes a traditional tool often used historically as a mean of training. In 2001 Forem – the public organization in charge of training for the unemployed for the Walloon region– decided to renew all its IT infrastructure dedicated to self-tuition for an e-learning infrastructure. Gradually, the idea not only to buy online courses – mainly concerning office tools – but also to develop its own content raised. In 2003, a new department was set up, and funded through its involvement in several European projects, in collaboration with university research centers. In 2004, the federal

government decided to set up a new policy of “activation of the unemployed”, and to give more money for vocational training, allowing new e-learning policies.

In Walloon region, the development of the “public” e-learning is also based on the activity of the 21 “Centers of competence” (*Centres de competences*). Those are disseminated all over Wallonia, and specialised on certain fields or sectors of activity (wood industry, ICT, industrial automation, etc.). Those centers are joined together in a network coordinated by Forem. Their aim is to organize professional training in link with labour market needs. They are often structured around employers federations, and have as a main public-target the currently working employees. However, they are also brought to address other public, such as the unemployed or the students.

Centers receive certifications from the Forem (and, consequently public funding). Several conditions are required, and among them the need to offer e-learning content to their public (2 courses/year in 2004; 20% of the total offer currently). These courses relate primarily to activities related to job finding, communication skills, basic IT skills, etc., although several more specific initiatives emerged (orthography, specialised softwares, etc.). The Dokeos platform was retained as a common standard for all those centers of competence.

Since the end of the year 2006, the Walloon Agency of Telecommunication (*AWT*), became the public authority in charge of the global coordination of the e-learning offer for the Walloon region. The AWT carry on this activity within the framework of a regional program (program Prométhée II), whose objective is to develop economic activity through the ICT appropriation by the greatest number. This program gathers the DG of the research of the Walloon region (DGTRE), Forem and the Centers of competences specialized in ICT. Trough this project, AWT has also funded several research activities. An study related to the identification of barriers to the adoption of e-learning was carried out in 2004, from an empirical investigation of the *Virtual campus in management*. A second study related to the situation of *e-learning in the higher education – French-speaking international environment* was carried out in March 2006 by LabSET of the University of Liege. A website identifying the e-learning offer for the French-speaking community has been recently also designed and put in line (www.learnonline.be),.

Similar strategies are also pursued by the VDAB – Vlaamse Dienst voor Arbeidsbemiddeling in Beoepsopleiding – and the ORBEM – Office Régional Bruxellois de l’Emploi –, both in charge of training for the unemployed for the Flemish and Brussels region, although their specific contexts (in particular the kind of grid of centers of competences) differ. The platforms of development selected are also different (Lotus CMS for the VDAB; NetG for Brussels Formation (ORBEM)), which makes the exchange of contents difficult.

Relevant links:

<http://www.awt.be/web/edu/index.aspx>

<http://www.learnonline.be>

Research reports:

http://www.awt.be/contenu/tel/edu/rapport_campus_final.pdf

http://www.awt.be/contenu/tel/edu/e-learning_labset.pdf

3. The e-learning in the private/public organizations

The third category of actors of the e-learning in Belgium is composed of the organisational users, whether they be from public or private sector. It should be noted, on this matter, that the uses of the e-learning are a little different : the training strategies within those organisations takes part of broader management and HRM policies. This is reflected in the need for more sophisticated e-learning platforms, that allows organisation to integrate e-learning strategies to other HR dimensions such as competence management, evaluation, career, compensation and benefits, etc.

Due to those different use of e-learning, the economic actors mainly active on this market are the big ICT consulting companies and, to a lesser extent, some Belgian actors, in a limited number, very specialised. In addition, it is noted that Belgium is at the origin of two software having acquired a worldwide reputation: Claroline and Dokeos. These two software are currently developed by organisations which have also developed commercial activities oriented towards services.

Conclusions

In conclusion, the following elements are worth to be highlighted :

- the bases of development of e-learning have now been established in different sector, and nearly every university ;
- this development depends however very strongly on personal initiatives, in the absence of a structural anchoring in the organizations ;
- attempts to overcome traditional borders, between linguistic communities, universities, the worlds of education and the private companies, are to be raised. However, one can acknowledge that kinds of use of e-learning are progressively.