Work integrated learning in French high education:
Towards new logics of use?

The case of innovation support in SMEs

Frédéric SAUVAGE (FORMASUP), Nathalie LEROY (FORMASUP), Francis GUILBERT
(Université de Lille 1)

FORMASUP, 7 bis Avenue de la Créativité
Parc des Moulins, F59650 Villeneuve d'Ascq, France
Tel : +33(0) 328.337.520 - Fax: +33(0)328.337.521
nleroy@formasup-npc.org

Introduction
In this paper, we’ll present the development of the WIL in the French high education, through a labour contract (this French specificity is named “apprentissage”, named throughout this paper “WILTMC” (Work Integrated Learning Through a Multipartners Contract). This specific training is conceived as a pathway to employment. Beyond the logic of use, it appears that the WILTMC opens new practical logics. In this paper, we assume that the position of an apprentice engineer in a SME (Small and Medium Enterprises) is a vector of innovation in France.

Because of the rise of competition from low cost countries and constraints of sustainable development, companies must focus on innovation to remain competitive. Innovation may take place in products, services or processes. Actually, innovation is a real competitive advantage in a global economy based on knowledge (Anand and AI, 2007).

However, as important and strategic as it is, innovation remains uncertain and complex. The management of innovation requires a vision, organizational transformation and creativity. It also mobilizes resources in research and development that SMEs barely have (Subramanaim and AI, 2005). This paper aims to question how the sustainable presence of a young apprentice in higher education can be a vehicle for innovation in SMEs facing this problems. It is based on an experiment set up in northern France to position apprentice engineers in small businesses to promote and support innovation. It presents the results of an exploratory study which subject is innovative behaviors of apprentice engineers.

At first, we will study the reasons for the WILTMC development in French higher education and then the characteristics of this training at the institutional, educational and financial levels, focusing on the actors. Finally, we will see how WILTMC fosters innovation within companies.
Work Integrated Learning Through a Multipartners Contract in French higher education

In a context of persistent difficulty for youth employment, the French authorities want to promote the WILTMC system. This development effort involves all levels of training and particularly affects higher education. Devoted for a long time to manual jobs and suffering from a bad image, WILTMC has been the aim of intense rehabilitation work.

From 1987, the range of qualifications achievable through an apprenticeship has been widened to include the professional certificate (certificate of vocational aptitude), the vocational high school (vocational baccalaureate diploma), the higher technician certificate (advanced technician's certificate), engineering diplomas and master degrees.

The French government pledged to develop apprenticeship as a way of success for both school and employment. To compare the conditions of access to youth employment by WIL or initial learning, the CEREQ (“Centre d'Etudes et Recherches sur les Qualifications”- Research Center on Qualifications”-2011) has carried out a survey in 2010 among young people from the 2007 generation following their studies with choice between WIL and initial learning. In France, these two paths are possible to achieve the same degree. Among the 739,000 young people leaving the French educational system in 2007, 125,000 were in apprenticeship in their last year of training, that is 17%. This survey shows that with an equivalent level of training, apprentices better fit the labour market than the others. Their employment rate is 10 percentage points higher than the latter. More detailed analysis taking into account the socio-cultural backgrounds and origins of students confirm these results.

As youth unemployment has emerged as less and less socially tolerable, a kind of national consensus was forged among the decision makers from the political and social partners to promote the WILTMC throughout all study levels. From 220,000 in 1995, the number of young concerned now exceeds 430,000 in 2012 and an ambitious plan is considering to increase this number to 800,000 in the next 3 years. The french Government plays on both sides. On the one hand, it encourages financial companies to increase the places offered: social charges exemption, premiums for training effort, quota of apprentices to reach (currently 4% of all employees, 5% as a next step) with taxes in case of insufficient involvement. On the other hand, it tries to get young people to engage in this direction by improving the living conditions of apprentices, and promoting the professional prospects. In the same time, efforts were undertaken to improve the image of apprenticeship with important information campaign, as it is often associated with academic failure and ability to grasp only practical skills and not theory or intellectual professions.

It is especially in higher education that growth in the number of apprentices has proved to be the strongest. Very tiny 20 years ago in the universities and colleges, it now covers more than 100,000 young people and most institutions in higher education have entered the WILTMC curriculum into their organization. If the improvement of employability argues for the development of the WILTMC, the future of this development depends on the various practices used by the young and the training centers.
WILTMC in Higher Education: a device with unique features

WILTMC is in France one of the four possible ways to obtain a degree, as well as traditional initial training, continuing education, and accreditation of prior experience. In other words, it is not a way of training with its specific degrees and training device but it is part of the existing system of higher education. If there are courses that can only be prepared in WILTMC, most studies available in this way are also offered by classical training. The idea is thus to offer young people the choice of their kind of training.

WILTMC, as it is constructed in the French higher education, has strong singularities. He composes a quite original training model as a basis for the idea of a "professional university" (Decomps and Malglaive, 1996) or "sandwich course school" (Geay, 1998), alternative model of education "to school full time and part" (Lerbet, 1994, p. 194), or "cons-model" in the training of future managers for the others (Bousquet and Grandgérard, 1996).

1. **WILTMC is based, firstly, on the principle of sandwich courses and dual responsibility.** The young has dual periods between training center and company. WILTMC is not reducible to one training but combines employment and training, experiential learning in the workplace and learning in formal teaching situation (Geay, 1998), acquisition of theoretical knowledge and knowledge of action. In this sense, "modern" WILTMC is based on the fact that organizational expertise can be formative but not enough as knowledge remains inaccessible only by experience.

The formative dimension of organizational situations is explicitly recognized provided that they are adjusted in this way. WILTMC is designed, in principle, as a device to make organizational situations the anchor of the process of acquiring and developing skills. In order that professional activities can effectively serve as an anchor to effective skills, the employer is legally bound "to provide practical training to the apprentice. He assigns him particular tasks or positions allowing the execution of operations or works which comply with an annual progression target set by agreement between the CFA (Centre de Formation d’Apprentis-Federative Structure for Apprenticeship) and the business representative who enrolls the apprentice."(Article L117-7 of the Apprenticeship Law). In addition, a company tutor is appointed; he has the mission of “contributing to the acquisition of skills by the learner (...) in conjunction with the CFA” (Art. L 117-4).

WILTMC is based on dual time and place. The company and the CFA have both responsibility of training named by Clénet & Gérard (1994) as "power-sharing form" (Clénet and Gerard, 1994). According to this principle of shared responsibility, the company and the CFA are co-actors in training. So there is a major difference between a training period and WIMTMC: in the classical system, the institute is the pilot, meanwhile in the co-op system the company and the institute are both “engaged” (50/50) in the system.

2. **WILTMC is a partnership of actors at different levels and a set of interactions**
Many kinds of actors are involved: political and institutional (i.e. CFA, regional council, professional sectors, Government); the apprentice by himself; the professor and the company tutor.

Moreover, there are organizational links between all the actors, but more particularly between the company and the training center, and also operational links between mentor and company tutor focused on the apprentice.

How can such a system of apprenticeship start between actors operating in different logics? How does such a composite assembly emerge and function? Two types of processes appear important in this context (Sauvage, 2000, 2009): "a formatting process" of the relationships between schools and companies, and a symbolic process transaction in terms of the meaning that has to be given to the action.

During the "shaping process", various aspects have to be considered. In order to implement the collaboration, several adjustments are necessary: temporality (alternative periods of dual process), spaces (places of dual process), rules (status of the young, internal rules,...), devices and technical tools transmission or educational assessment (definition of curriculum, evaluation criteria, program). They assume the emergence of “interface performers” able to operate translation processes between actors referring to different environments: these performers are part of a common sense principle that bases the actions of other actors (second process).

The "symbolic transaction process" (in terms of the meaning of the action) is developed through the dynamic cooperation of various actors (apprentice, actors of the company and the CFA, ...) that are more in plural than conflictual relations. A WILTMC curriculum connects actors who build, through their interactions, compromises on the principles of justification of their actions (Boltanski and Thévenot, 1989). Cooperation, at the contrary of coordination, requires agreement on values, a common sense principle, an implicit compromise (with ambiguity and partial transparency) which allow actors to be involved in spite of their symbolic distance.

Even if there is joint responsibility for training, control of pedagogy depends on the CFA which is the architect of the training. It's up to it to set dual time for the organization of sandwich courses, to ensure coordination to drive the interface between school and company (appointment of school tutors, logbook, individual and collective meeting learning with the company mentors, ...), to set compliance with the theoretical and practical contents, to establish evaluation procedures, ...

3. WILTMC is based on an employment contract between the young and an employer throughout the duration of training necessary to obtain the degree. The presence in a company does not take place in the school system but is contained in a framework of rules and legal constraints that refer to specific labor law. This is a contract from date to date, with earnings that are fixed by regulation (% of minimum wages according to the age of the apprentice and duration of the contract). The company is theoretically obliged to organize work in a way that should be formative (Pignarre, 1991).
According to Voisin (1993), the existence of the apprenticeship contract establishes the primacy of the business membership of the apprentice: the contract holder would first be an employee who is formed by the exercise of a work activity and, in addition, a training set. The apprenticeship contract commits both apprentices and businesses in a legal and social status of employer/employee together in a training relationship.

The Employee status of the apprentice is a discriminating factor that distinguishes WILTMC from other forms of training including internships or dual system in the school system. WILTMC implements a genuine employment relationship which places the learner, according to Decomps and Malglaive (1996), in "full scale" situations where he will be able to exercise responsibilities. Both authors stress the idea that WILTMC promotes real responsibility because the contract involves responsibility and salary together.

By his employee status, the apprentice is a full member of the company and not only a student as for the trainee. The apprentice is involved in an employment relationship and in a logic of organizational socialization. In real situation in the company, he lives and shares the physical, technical, commercial and organizational constraints.

As explained by Malglaive (1996), it is under this principle of responsibility that engineers and management trainees undertake practical training to carry out what they are asked to do and vouch in front of others (team, company, customers) waiting for a result. As the author notes, "this is where lies the fundamental break between school and life. The school (...) is indeed focused exclusively on self-construction. We are more under the responsibility of others than responsible towards others "(p. 95).

If we follow these two authors, the training agreement strengthen the sense of responsibility: first, through the intensity of "commitment [of the apprentice] in interdependence with others"; then, by promoting "the discovery of a transpersonal significance of the action, with events in relation to each other, groups and organizations" (Louart, 1990) ; and moreover, by providing a sense of responsibility in “genuine” situations, which is both controlled, gradual and accompanied.

Thus, the authors call for the development of a "professional university", university on the WILTMC model by having as main principle the exercise of responsibility by the student. As a future practitioner, he must have access not only to theoretical knowledge, technology and methodology but also practical knowledge, autonomy, decision ability. The exercise of responsibilities is fundamental. However, without jeopardizing the interest of giving responsibility to the young in process of professionalization, Pelpel (2001) points out some paradoxes: Any responsibility involves, as he explains, a risk for the actor and for the object of his action. If this risk-taking is itself formative, particularly through the teaching of its management and testing of its effects, it also faces a dilemma.

"In a situation that he doesn't master, the learner is faced with a dilemma: either he minimizes the risk of error for him as for others, and makes self-censorship by taking refuge under the protection of seniors, waiving initiatives. In this case, he conforms himself more than he forms himself [he renounces to take the risk of liability]. Or, on the contrary, he
increases the risk of errors, with all consequences thereof. In this case, the fact to assume responsibility for a situation appears like irresponsibility [takes personal responsibility without having the means]. Hence the interest of a progress in the access to responsibility.

Employee status gives another strong feature: there is a double logic of training and employment. A dual purpose is assigned: it is both a device for acquiring skills and a way of professional mobilization of young people.

It is also based on the principle of a long term statutory and organizational registration which differs from the internship (Pelpel, 2001). It gives the company a unique position: skills producer and skills consumer; during the contract, it is a producer of certified skills and managerial identities but it is also a skills consumer; afterwards, the company is also a user when hiring later the apprentice.

**Dissemination of WILTMC in higher education: towards new logical use of WIL**

As described above, WILTMC has been the subject of considerable debates since its expansion in higher education. The terms of the debate and the issues are at three levels: pedagogical issues, financial issues (that can be coupled to strategic) and institutional issues (referring here to the school).

On a **pedagogical level**, the debates refer to the nature of the learning process as it is carried out in skills development. The question is to know the dosage between theory and practice.

Acccording to Geay (1998), it is not sufficient to implement a WILTMC situation for being formative. He insists on the idea that "WILTMC has to rotate the "succeed-understand" loop in both directions [inductive-deductive]." For Chaix (1993), an educational project has to be implemented. We are not just using theory on the field, but the field by itself is the place of construction of the theory. For Jorgina Roure (2011), WILTMC promotes the change of teaching practices in higher education to answer to specific needs of the public.

On a **financial plan**, the main issue is about the choices made by the regional councils in charge of the management of WIL in the territories. Financial issues also refer to the need for institutions of higher education to seek new financing for their development. However, financing is a little bit complex; taxes are paid by all businesses, whether or not they host an apprentice, and distributed to schools and universities by regional councils.

The issues are also strategic, as WILTMC allows the training centers to expand their offerings on the training market and strengthen ties with the environment (especially businesses).

Finally, the terms of debate are at an **institutional level**. The WILTMC development is part of a movement to professionalize the universities in Europe and more particularly in France where the government has enhanced workforce development as a full mission of universities. Dissemination of WILTMC has resulted in a closer dialogue between academic and business world, and the rise of joint programs.

**Towards new logics of use of WILTMC**
With an analytical approach of learning devices, public policies, practices by training institutions actors, and young people, we have established the following conclusion:

Development of WILTMC is finally more based on a search for effectiveness in promoting employability and dialogue between academic and economic worlds than on pedagogical aspects.

Young people have integrated into their individual strategy WILTMC as a mean of acquiring valuable and cumulative signals on the labor market, namely both the degree and professional experience. Ultimately, the young strives to act on his employability, with a triple advantage: the degree, the experience, and the salary all together.

The “money earning” side is important; WILTMC is heavily used by young people from upper middle class, considering this is a gateway to higher education and especially for continuing studies, instead of day jobs to finance them. In its use, WILTMC is a vector of democratizing access to higher education.

For businesses, such a high plasticity management tool is quite interesting; it responds to at least two major challenges in terms of human resource management and communication. It is a way to train potential skills through an integrative period, and meanwhile to constitute a workforce in the company. WILTMC can therefore allow a quantitative and qualitative flexibility. It is also a communication medium for the political and institutional environment, training institutes in higher education (and future graduates) and young people (business image). Ten years ago, businesses had the choice between "opportunistic", "selective", "integrative" and "cooperative" logics. Today, the integrative logic is prevailing.

The role of each actor in the training process is also redefined. This movement affects the place, the tasks and skills of trainers. The teachers are now evolving into higher education institutions where WILTMC is growing, especially in educational support. They emphasize that WILTMC brings a distinctive value by developing reflective learning strategy (review of experiences; portfolio; report written in team; individual report; peer work, debriefing with the mentors), by implementing active learning with pedagogic process, developing partnership between universities and firms (recruitment, assessment, skill learning process; individual plan of learning). They also argue that trainers should not stay focused on their speciality but favour on the interdisciplinary in order to help the apprentice to understand and solve complex problems. The teacher must not be an expert giving solutions but has to help the apprentice to detect and develop abilities to find solutions.

We sought to measure more precisely the scope of WILTMC for innovation in small and medium companies and whether there was room to place WILTMC in innovation management.

**Innovation and WILTMC**
Does the apprentice constitute a support for the company’s innovation effort? This is the question that served as the foundation for a complementory research. This is based on an exploratory survey (dual investigation).

1. A questionnaire study among 300 Master and apprentice engineers to consider their contributions to the innovation effort of their company, their innovative behavior and consideration of this behavior by their company. These apprentices are in their final year of their training, either in their third year as an engineer or second year of master.

2. The study of an experimental device designed to position apprentices in companies who are developing innovative projects, whether it's disruptive or incremental innovation. A sample of thirty apprentice engineers in small businesses is used. This device is called INOPME. These companies are located in northern France. Five objectives are pursued: promoting the detection, the emergence and development of innovation projects in SMEs; informing companies on the contract of apprenticeship and training program implemented by four engineering schools (ENSIAME, ICAM, POLYTECH’LILLE, CESI); developing innovative knowledge and technology transfer between partners and SMEs; proposing a specific support for the apprentice / SMEs and helping labeling of innovation projects. Schematically, an apprentice is positioned according to his potential in a company with an innovation project. A research professor is appointed to mentor the young and the company, considering methodological aspects and technology transfer opportunities.

The first study allows to better position the apprentices in their postures and innovative behaviors and their consideration by the company. Radical innovations, for example, require from apprentices an ability to convince their superiors, to prevail over inertia and conformist strategies.

In terms of posture and innovative behavior, several conclusions can be drawn:

- A strong majority of apprentices consider to be a source of innovation in their business, and believe in their ability to take initiatives. Over 40% of apprentices are involved in the detection of areas of development and the creation of "innovative solutions". A quarter estimates they have participated in an innovation project.

- WILTMC develops confidence and assertiveness, decision-making spirit, initiative-taking.

- Apprentices who can prove their ability to create are those who will have the ability to make connections between practices and learning (relationship between their syllabus and their own existence, i.e “the real life”)

We identify six challenges and two barriers to the exercise of innovative behavior among apprentices. Challenges are a relative freedom of action and initiatives, the right to make mistakes and accepting "positively transgressive" behaviors, supervisory encouragement (mentor, manager), work group supports and challenging work and resources (time, means, access to networks). As seen, the managerial and human resource practices associated with an "innovation-supportive culture" have to be considered. The attitude of the manager and especially the mentor with regard to the change process, plays an important role. Apprentices
who operate in companies where innovative behaviors are rewarded live a very different experience from those immersed in environments where it is the conformist behaviors that are valued. The barriers are explicit or implicit compliance requirements penalizing initiative, inhibiting learning, and small consideration or support from mentors concerning the apprentice's ideas, especially if his ideas cannot be discussed at the training center.

In conclusion, this paper suggests that a suitable tutorial, with special emphasis on knowledge acquisition, development of an entrepreneurial culture and connection with an open network for technological transfer, promotes for apprentices innovative behavior and development of key skills. The educational exercise as part of an adapted and constructivist pedagogy helps to develop entrepreneurial culture among young people. The construction of knowledge is essential in this dynamic: know-how and knowledge, problem solving, research and combined use of several tools in complex environments and contexts. The entrepreneurial culture is promoted by pedagogies that develop the inductive mutual learning (from each other), making (learning by doing), inter personal exchanges, guided discovery, reactions of different people in an informal and flexible environment, under pressure due to the need to achieve. Borrowing from others, and trial / error processes to solve problems are also important. Under these conditions, the use of apprentices could be part of innovation management. A “win-win” deal for every one. A key to success.

Keywords: work integrated learning under contract (WILTMC), collaborative innovation, inductive pedagogy, dual system, tutoring, “intrapreneurial” posture.

BIBLIOGRAPHY


