Engineers’ Abilities Improved Thanks to a Quality WIL Model in Coordination with the Industry for Two Decades

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ABSTRACT

The authors’ work-integrated training process leads to chartered engineers in the production field and was first created in coordination with companies in 1992. The public were already employees of the company (CVT) who wanted to improve their position. Both public and actors have changed through the years and recruitment includes now younger graduates (IVT) wishing better employability. Elder now focus on diploma instead of skills acquisition. “Digital natives” with quick access to knowledge just wish turnkey solutions; not old enough to make positive criticism of information and reluctant to analyze what requires effort. Firms face crisis, cost reduction and retirement of experts with no efficient skill planning. University itself faces changing rules (private versus public), European and world competition. But the training remains efficiency thanks to a proper organization; it respects consistency of practices with sustainable development and complete congruence with the environment constraint and evolution; quality, optimization, innovation, continuous development and value management.

Keywords: Apprenticeship, Cooperative Assessment, Diploma Accreditation, Long Life Learning, Mentoring, Professional Skills, Quality, Sandwich Courses, Sustainable Development, Value Management, Work Based Learning, Work Integrated Learning

INTRODUCTION

This paper presents the model of our work-integrated learning developed since 1992 as an answer to professional needs for chartered engineers dedicated to the production field; with operational skills and men management abilities. The curriculum and training process conducted by the IESP department (Exploitation Engineers of Production Systems) of the Ecole Polytechnique Universitaire de Lille (Polytech’Lille, France) is summarized with an emphasis upon the main steps of the training model. It is an accredited training leading to Master’s degree in engineering (French Engineer level) with sandwich courses and

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work experience based on a professional profile developed with the industrials. Since 1992, the public target are employees of the companies who improve their position thanks to this Continuous Vocational Education and Training (CVT). In 2004, Initial Vocational Education and Training (IVT) was developed for younger graduates that search to increase their employability. The department dedicates itself to Long Life Learning and apprenticeship. This practice relies upon a background experience of 21 years with close partnerships with industries from all sectors. Graduates can work in any industrial sector dealing with engineering production having a strong background in technical and managerial skills. In this paper the historical setting up and evolution are elaborated within the legal French education framework. First focus is made on the original motivation to create the training. It’s a way to give an answer to today interrogations: Why teaching ? To teach whom ? What and in which purpose ? And finally how to do it well. It will explain why the training still exists after so many years. Secondly the training model based on the IESP professional profile is presented in details through the required elements that lead to success: this model presents an academic curriculum with WBL that integrates a real formative work situation in the industry; learner will individually increase their skills. Thirdly a main focus is made on the organization of the trainings within a sustainable development policy which is the clue to conduct the process in complete congruence with the environment constraint and evolution: accreditation through quality, optimization through continuous improvement, innovation through sustainable point of view. In twenty years, the public has changed: whereas elders usually expected skills through experiment they now focus on diploma to get a better position with no difficulty and no risk: “Digital natives”, young people from the Y generation (echo boomers) have quick and better access to any controlled or not controlled information. Therefore they expect immediate knowledge and clues, looking for less energy spending thanks to fallacious turnkey solutions. In a world of globalization, University has to face national, European and world competition. It has to find financing as a consequence of its evolution and mostly in France where the organization of higher education is still changing (from public to private rules in some way, new missions for long life learning) as shows the last law voted in 2013 (French Government, 2013). The last part of this document makes the link between our choices (model and process) and the constraint of our environment represented by our partners, the accreditation committee of higher education institutions (CTI, 2013), the European Association for Quality Assurance in Higher Education (ENQA, 2009) through European Standards and Guidelines (ESG), financing control, Evaluation Agency for Research and Higher education (AERES), Institut des Techniques d’Ingénieur de l’Industrie (ITII, 2013). Our conclusion deals with our proposal for future development; mobility, research, shorter training and individualization to allow learning at any age. Conducting training with a correct organization with sustainable concerns is our solution to develop and remain, adapting functioning and curriculum respecting the original motto: “Ingénieur autrement, Apprendre autrement !” © (IESP, 1992) now added and translated in English with “The IESP, learning in a different way, to become an engineer!” © (IESP, 2010). The basic idea has changed but the method is still convenient thanks to the still existing customer approach, commitment of all and leadership (listening and correct reply to their concerns respecting each actor goals and constraints): keeping ourselves adaptable and therefore innovative.

**HISTORY OF THE TRAINING IN THE EUROPEAN AND FRENCH CONTEXTS**

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