

Dimensions of “Work Process Knowledge”

Maria Teresa Oliveira
Ana Luisa Oliveira Pires
Mariana Gaio Alves

1. INTRODUCTION

This chapter is a contribution for the understanding of the development of the Work Process Knowledge (WPK). It considers different dimensions: the organisational, the educational, and the individual. Within all the dimensions, it also attempts to analyse the implications on the construction of professional identities.

Our framework is the concept of Work Process Knowledge developed in the Whole Project (Boreham, b-2000). Thus we mean by wpk the capacity of carrying out work tasks mobilising different kinds of knowledge. According to Boreham (a-2000) “neither the codified knowledge recorded in textbooks, nor the habits acquired automatically on-the-job constitutes wpk, but both are essential resources for generating it in the workplace”.

The chapter is organised in three different parts: the first one is focused on the evolution of the work organisation, its articulation with the construction of the wpk, and the development of the individuals competencies within work contexts. The second part is centred on the challenges faced by the system of education/training (namely the university system) regarding the construction of wpk; we also present the results of some exploratory studies carried out with the aim of understanding the relationship between education and labour market. The third part is centred on the articulation between the development of wpk and the construction of professional identities. In the conclusions we sum up the main dimensions of wpk development process.

2. THE CONSTRUCTION OF WORK PROCESS KNOWLEDGE IN THE CONTEXT OF THE EVOLUTION OF THE WORK FIELD

In the wide range of literature existing in this area, it is possible to identify the emergence of a new work paradigm in the companies, characterised by a larger technological, organisational and human-resource flexibility.

This new emerging paradigm of production (processes and products flexibility), has been triggered by the growing demands of the markets within contexts of incertitude and unpredictability both of which are often associated with technological innovation. In this context the introduction of new technologies, as a factor of flexibility and modernisation is not sufficient to ensure a company's success. According to Kovács (1992, p. 27), companies often "hope for a improvement of its competitiveness, with no changes in its structure, production organisation and/or human resources management. However, the use of these new technologies does not eliminate in itself the existing organisational handicaps; on the contrary, it may even aggravate them. The effort to modernise equipment does not replace the effort to modernise the organisation". To this author, there are two strategies of modernisation: One is based chiefly on the technological factor, and relies strongly on the introduction of new production technologies while the other is based on the human factor and on organisational aspects, focusing on the quality of human resources, on the "intelligent" organisation, on the optimisation of information processes, on the effectiveness of relations established between work-teams, at all hierarchic levels of organisation.

The flexible production is a more adequate type of response to the current socio-economic context, in which one seeks to satisfy the current challenges on competition, quality, term accomplishment, answering the specific need of clients, innovation and diversification of products (Kovács, 1992). The flexibility emphasises the questions concerning the organisational structure and the human factor. Therefore, the structure of the companies becomes simpler (decrease of hierarchic levels, decentralisation of decisions and responsibility, higher participation by individuals in decision-making), functional co-operation is improved and more effective information and communication channels are established. The personnel is given further autonomy and polyvalence, individual and collective learning is recognised as a factor of paramount importance for organisation development, and training performs a fundamental role.

If this trend is confirmed, individuals are then required to develop new competencies that are crucial for the development of the wpk. Amongst those, we underline an ever growing demand for competencies due to the integration of formal knowledge (acquired within education/training systems), and informal knowledge (acquired within work and life contexts).

The study on competencies that are not specifically technical – often called personal, social, transversal, etc. – have been the object of some attention in the last few years mainly because some of these competencies, due to their nature, may be transferred to different situations, if the conditions are favourable.. These competencies assure the effective performance of the individual, throughout his/her professional life, allowing him/her to cope with the work evolution and increase his/her professional mobility, contributing thus for the own personal and professional development.

To characterise these non-technical competencies, we surveyed the literature currently available on this subject (Pires, 1995), and found that they are referred by several authors who name and characterise them in different ways. Amongst the most significant competencies, we may point out the creativity, the flexibility, the autonomy, the teamwork, the communication and language competencies, and the ability to learn through different situations and contexts.

With regard to the language competencies, the flexible models of work organisation are strongly aware of the power of language. Within the modern management organisation called "participated management" where all the workers are expected to participate in the production activity in order to create an enterprise culture and identity, language plays an important role. At a different level, in the enterprises, all are engaged in language activities. The novelty, however, consists of recognising that language is itself a factor of production, a source of productivity, an instrument of management and a vector of social mobilisation. Language becomes a central concern in work organisation for fostering the involvement of workers, their active participation and consensus building in decisions-making, and more important, for encouraging their initiative and intelligence to achieve higher level of producibility (Borzeix, 1998).

The new role of language competencies are related to the decrease of direct manipulations of products or objects and the increase of the use of signs, codes and symbols in work activities. In our advanced society the work process is continually undergoing shifts at rapid pace, namely with the development of new technologies of information and communication, telematics, automatisisation, robotisation of production and the increase of services. Consequently the role of the language has shifted quantitatively and specially qualitatively. Generally speaking the importance of written or spoken language has increased in all new job, while the transformation of matter and physical work decreased. Nowadays, for the skilled labour market it is indispensable to master the symbolic competencies necessary to read a table, a diagram, a report, to write a note, fill a questionnaire, make a synthesis and this holds true even for the lowest ranks of the work force hierarchy. To sum up the activities of production, communication and interpretation are closed linked.

2.1. DEVELOPMENT OF COMPETENCIES IN WORK CONTEXTS

Organisations can be potential contexts for the development of competencies, mainly within the framework of situated learning integrating communities of practice (Lave and Wenger, 1991, Wenger, 1998, Evans, 2000, Evans and Hoffman, 2000).

The new models of work organisation are opening to new ways of learning within professional activity situations, which in turn is leading to the recognition of other learning processes (informal and situated, experience-based). The company, with its

learning potentials, develops the individual and collective learning of those participating therein, hereby promoting hence its own evolution.

At present, we are witnessing the dilution of traditional boundaries between learning and work. The space-time for production, insofar as it contributes for the development of individuals' competencies, may become a privileged space-time for learning, promoting individual and collective learning of those who are integrated therein.

Several studies have focused on the learning potential in work situations (Zarifian, 1986, 1992, 1995, Madelin and Thierry, 1992, Mallet, 1995, Onstenk, 1995, Gama, 1997). The emergence of the "learning organisation" concept stresses the importance that work organisation has in individual and collective learning.

This type of organisation connotes a very rich learning environment and as such it should be assessed as an educational organisation, since it has the potential for optimising the learning abilities of those intervening therein (Madelin and Thierry, 1992). On this view, learning is seen not only within the framework of an explicit training activity, but also in the framework of an organisation of the productive activity with strong learning components. That is learning occurs in informal contexts and results from the very production activity and is necessarily integrated in the work activity (Gama, 1997).

Onstenk (1995) refers, in this assertion, that learning is taking a growing importance with respect to the competencies and qualifications building along with the continuous change in the context of work organisation and the introduction of new production technologies. To this author, the paradigm is characterised by the existence of the work team as a fundamental unity, replacing the individual function and by the high unpredictable content of tasks which stem from the confrontation with the unpredicted, which entails the need for problem-solving strategies in coping with everyday challenges.

The new features of work organisation and production forms require thus another type of competencies quite different from the traditional ones. It is within this context that is stressed the need of a wide-range non-technical competencies, and multidimensional skills in addition to professional specific and procedural knowledge.

Appraising the importance of contextual learning in practical real situations, Onstenk observes that "learning at work places cannot not be confounded with training at work places, featured by an explicit pedagogic structure, namely via training purposes and programmes, explicitly based on the active participation of the trainer or on the use of didactic material, projects and evaluations. (...) Learning at work places is a multidimensional process, that can be sub-classified according to different functions, inherent

to the very work activities and situations" (1995, p. 35).

The author analyses the learning potential in work situation, which becomes the result of the interaction between the individuals' characteristics (qualifications and experience, acquired competencies, individual abilities, willingness to learn, motivation) and the learning opportunities offered by the work markets (characteristics of the functions performed and work environment), and also the offer of training at the work place.

2.2. LEARNING CONDITIONS WITHIN ORGANISATIONS

There are a number of factors deemed to be important for the acquisition of competencies within work contexts. These competencies can be understood in a wide sense as a combination of general and technical knowledge, attitudes and behaviours, skills, and the like.

These factors have a different nature and include such aspects as work organisation, organisation culture, organisation climate, specificity of communities of practices, entrepreneurial communication and type of relationship established, scope of autonomy and responsibility conferred upon to the actors, work complexity, incentive system, among others.

Rolo (1996) developed a study on the problem of learning within work contexts and she stresses the following learning dimensions: an organisation that is open to surroundings, and provides rich learning experiences contributes for the actors' satisfaction; a project based on an organisation is strongly appealing to the actors' participation; team work is seen as a developing way of a participating culture in that this type of work is positively valued and results from the perceived need of problem solving strategies which are necessary to find solutions within the scope of the organisations' functioning; the existence of opportunities to develop learning dynamics and to take advantage of informal spaces for learning; the existence of favourable factors for the development of relationships between the actors that are experienced in a positive way: strong stability of the personnel, mutual knowledge, personal affinities, local knowledge, active role within the direction team; informality of the relationships established.

Gama (1997) also points out some learning aspects of organisation and work situations that contribute for the personal and professional development: company's management should be strongly engaged in learning situations, creating thus a favourable climate for the participation and engagement of all collaborators; learning should appeal to the participation of the different actors by reinforcing the interaction between the individual and the organisation. The engagement of workers in the company's projects, and implementation of activities concerning problem solving, conducive to feelings of fulfilment; learning should be linked to the work context that is situated (valorisation of

learning processes within a work context on a daily basis of self-evaluation, team work, or work groups at the company, tasks planning taking in account moments for implementing and develop projects or solve problems, etc.)

To create such learning conditions, the organisation has to advance itself alongside these new trends. There has to be an evolution both in the tasks and the distributions of the responsibilities. At the same time, one must assure that such evolution is not translated into a permanent and continuous instability. It is of crucial importance to find a coherent point of balance between change and stability, in order to establish conditions for learning to take place (Mallet, 1995).

Time management is also fundamental for learning processes - comprehension requires availability of time and interchanges, it demands a different type of relations in addition to the prescriptive relation. As Mallet (1995, p. 15) emphasises "an organisation subject to a permanent urgency, and thus pressured to distribute the work to the best existing skills (the individual that does it better, does it faster), will not promote learning opportunities".

2.3. THE ADULT LEARNING AND WORK PROCESS KNOWLEDGE DEVELOPMENT

Learning is strongly based on a reflexive component. Self reflection and the attribution of meaning are indispensable for work process knowledge, which implies explicitly that the inner timings of the individual are taken into account, for these timings are necessary to his very learning process. "Acquisition of knowledge upon the work performed, in a reflective and critical way, - action backgrounds, features and objectives - requires a better learning ability of the workers, their receptivity to reflection and feed-back, their availability to think on the problems they face at work, in order to promote the debate on rules, and to learn to learn" (Onstenk, 1995. pp. 35, 36).

The role of experience and reflection for the adult learning process has been given a growing attention within the field of Educational Sciences by a large number of authors (Pineau, 1989, 1991, Finger, 1989, Dominicé, 1990, 1991, Josso, 1988, 1989, 1991). In order to the experiencing become learning it has to be rebuilt, modified, reorganised. To be reflected, it requires the existence of a cognitive process based on language and thought which identifies and transforms the experience. It is needed distance and critical integration. The learning dimension of experience depends in a great deal on the individual cultural resources that allow the making of meaning; experience is not a gross art; and to become learning it has to be reflected, thought about and symbolised so that it can produce a succeeding echo (Dominicé, 1991). This mental reconstruction requires consecutive thinking and cognitive perception and is thus abstracted from the phenomenon accessible for experience (Fisher, 1998).

Meneses (1996) assesses positively the importance of reflection for problem solving and learning. According to this author by analysing the professional practices cases the acknowledgement of the professional role allows the individual to take a strand as a social actor.

Adult socialisation processes are strongly based on their intentions and initiatives. The adult, with his personal agenda can oppose quite effective resistance, to the socialisation intentions imposed by the outside, which are not recognised by him/her as significant. Thus individual has a decisive role in the own learning process. The concept of "educational autonomy" is fundamental – it is his/her initiative, motivation, autonomy and interest that engage in the learning process, within a context of educational potential (Pain, 1991).

Learning accomplished via experience requires new ways of management and participation at work places (Gama, 1997). Participation is indispensable for creative production. According to Gelpi (1995), this kind of approach is not compatible with bureaucratic and hierarchic productive structures; this further strengthens that learning aspects within work contexts are strongly articulated with the work organisation forms established.

3. THE CONSTRUCTION OF WORK PROCESS KNOWLEDGE IN THE CONTEXT OF THE UNIVERSITIES

To face the challenges, and since it is very difficult to predict or determine the full range of knowledge that the future will demand from the individuals, the current trend within the higher educational system is to empower the youngsters with a wider range of competencies (via educational courses provided with a new range), through the development of both a permanent learning attitude (learn to learn), and a new set of non-technical competencies, which are deemed fundamental throughout the whole active life of individuals, and crucial to wpk.

The competencies, as were referred earlier, are developed through identification and socialisation processes throughout the different contexts of the individual's life (personal, educational, social, and professional) during a path made of experience, projects and practices, study and activity.

Harrison (1996) analyses this kind of competencies and its transferability, advocating that these works can provide a bridge between those who promote the relevant competencies to work and those who promote the relevant competencies to learn.

The development of wpk represents a challenge to the universities, which is traditionally oriented to the acquisition of knowledge and technical competencies. However, it

is possible to create favourable learning contexts for the development of wpk, within higher formal education and training systems, but it is necessary to rethink traditional learning models and strategies, introducing new dimensions, as the following:

A stronger articulation of formal learning and work-based learning; implementation of an active learning processes which includes the development of higher order thinking as problem-solving situations; creation of an experience-based learning; analysis of work situations through continuous personal and social reflection processes.

3.1. LANGUAGE AND EDUCATION / TRAINING AT THE UNIVERSITY

One of the University activities is the teachers/trainers training for vocational courses. Nowadays one constant in discussion of teacher education has been the demand for university/company partnership in order to gain knowledge by mutual exchange and benefit between research and practice. WPK is developed out of the personal experience of the actual work situation. As it is mentioned in the “review of the literature” of the Whole Project, co-ordinated by Boreham, work experience is not enough to promote wpk and needs to be mediated in some way (Lammont, 1998, p.6). Language, as mediator, can develop cognitive, personal, social and cultural competencies, which allows the reflection and self-assessment of work experience promoting wpk. However, these language competencies do not arise spontaneously. Language oriented to wpk must be a fundamental part of both vocational and educational training and applied research at the universities.

Language and work is an interdisciplinary field, not yet well defined or studied and as result it is not a usual theme in professional training. In fact, this innovative approach of language in the education field still meet some resistance from practitioners due to its complexity (Lazar, 1998). Some trainers failed to grasp the utility and importance of systematic learning about language and work. However, the relevance of this topic within the educational system has been imposed to the universities due to the rapid transformation of society. It is a great challenge for vocational and educational training to help trainees to find out what are the prerequisites of science development, what are the social purposes that are objectified by the introduction of a new technological tool (e.g. computers) fighting against the idea of social determinism by the new technologies. It is, therefore necessary and urgent to create an adequate pedagogy for developing competencies where language (about work, in the work or as work) could be seen as having an emancipator role enabling one with the power to change the own professional behaviour.

Work always implies the need of solving problems and making decisions. These tasks are based on high order thinking, reflection, and language. To solve a problem in the workplace is necessary to identify adequately the problem, to diagnose, to reflect, to formulate hypothesis, to built up dialogues, to argue, to make inferences, to communi-

cate the results, to prescribe transformations, to learn, to act. In short it is necessary at work to understand and learn through language.

Any professional activity has a specific vocabulary. In a training activity the knowledge of this vocabulary is essential for achieving high order thinking applied to a particular labour activity. Nowadays the mastering of scientific and technological language is like a second language with its many new terms, each one with well-defined area of meaning.

Training people about language and work, at the universities, is undoubtedly a complex task. At present language and work call up theoretical approaches from psychology, sociology, linguistics, pragmatics, ergonomic and cognitive sciences. In all these areas we can find useful theoretical proposals which may contribute for understanding the role of language in the construction of knowledge and the development of cognitive structures, both of which are necessary conditions for learning.

Training about language and work is not only the acquisition of functional and operative language for specific work. More importantly is the fact that to develop language skills and work language is a process entirely different from that of using language out of the work settings. Initial or continuous education in this topic are based on theory's self awareness and reflection of individual learning styles, of the role of collective learning and the opportunities for learning within a company's environment. All this three dimensions of learning are necessary in order to develop the individual language competencies that can be translated into professional action and construct the framework for long life learning, both of which are actually crucial for facing the challenges of growing competitiveness and its consequences for the mobility of workers and their rotation in work functions.

One empirical study (Oliveira, 1998) tries to shed light on how the issue of language in professional training is approached in the university formal pre-service training courses of vocational science and technology teachers/trainers in Portugal. The results highlight that the issue of language is not approached by roughly two-thirds (68.0%) of the sample. Moreover the trainers of teachers/trainers who explore that issue in their courses seem to focus on the use of language as a teaching tool rather than a learning tool. In particular it seems that they do not organise their courses so that to enhance their science and technology vocational teachers/trainers aware of the thought function of language and the important connection with the work.

3.2. GRADUATES' EVALUATION ABOUT THEIR INITIAL ACADEMIC EDUCATION

With the main objective of exploring the questions about the articulation between education at the universities and placement on active life, we carried out an exploratory

study. A survey (Ambrósio et al., 1994) was designed to characterise the training and professional route of a group of graduates and to evaluate the problem of the continuous training in the Portuguese context. The study is also of interest in that it led us in a preliminary identification what were the representations that the individuals have on the exigency of non-technical competencies by the labour market, and what were the strategies used by the individuals for their acquisition and development.

Graduates of two courses in the administration area and of two courses in the computer's area, that had at least 5 years of professional experience, were questioned.

This study suggests that the individuals recognise that they are required to have a set of non-technical competencies in their professional activity, further recognising that such competencies were developed throughout practice in specific work situations. Accordingly, the individuals acknowledge that they are required to have this type of competencies, in which the most prized were "responsibility" (65.1%), "autonomy/initiative ability" (45.6%), "team-work ability" (32.9%).

When questioned on how they have developed these competencies, individuals point out in the first place "practical experience" (88.4%), followed by "training in the work place" (18%). Most individuals concurred that these kinds of competencies were developed in professional situations, in work contexts. Significantly they did not mention the initial formal training practices as a mean for developing this kind of competencies.

Other results of this inquiry are related to the usefulness of the initial academic education at the universities, and with the frequency of continuous training after getting the degree. Nearly half of the inquired subjects (50.5%) were enrolled at that moment or have been attending additional training after the end of the course. This situation has little or nothing to do with a lack of inadequacy of the initial academic education to the professional areas in which the graduates found jobs, but rather is related to the perceived need of upgrading knowledge and of develop the job competencies, in order to complete the initial education. The majority of the inquired subjects (80%) declared that they worked in a professional area for which they had had adequate initial academic education. Again, the majority (85%) responded that they apply in their professional activity, knowledge and competencies they have acquired during the initial education. In this way, one can infer that there is a very high level of the satisfaction that relates the relationship between initial academic education and the subjects' professional activity. The majority of inquired subjects considered that initial academic education taught them to exercise "self assessment" throughout their professional life (78.6%), and contribute both to an "improvement of their career status" (67.3%) and for the "professional mobility" (58.5%).

It is worth emphasising, however, that a large part of the subjects (75.5%) think that, despite the knowledge acquired in the initial academic education, there are other types

of knowledge and competencies that are very useful to the efficient performance of a professional activity. The "practical experience" appears to them to be the best way to obtain and develop both technical knowledge and non-technical competencies (83.2%). They have also referred to the "probation period at the workplace" (36.6%). The subjects declared to have obtained and developed non-technical competencies, such as responsibility, initiative and teamwork ability.

3.3. CONTINUOUS TRAINING OPPORTUNITIES FOR HIGHER EDUCATION GRADUATES

In 1993, we conduct a research project aimed at identifying the continuous training opportunities to the graduates in Portugal. This training is provided at the universities and other institutions (enterprises, public administration institutions, professional associations, research centres). For each institution we identified the privileged training opportunities in accordance to the areas and the number of courses, the timetable, the budget, the type of certification, and criteria used in the definition of the target group (such as area of initial training, age and professional experience of trainees.).

Upon analysing the data, we felt entitled to raise questions about the adaptation of the post-university courses provided by these institutions to satisfy the needs of those who don't fit professionally in the higher studies. This is because universities seem to privilege the existence of courses mostly oriented toward fundamental research, while neglecting technical specialisation. However, we found that among these research courses we can find many other courses with different areas of specialisation, which lead us to think that some of the universities do actually privilege an intense relation with the work market.

The provision of continuous training for graduates from the non-university institutions, appear to have a more professional character, making a distinction from the university provision. Those non-university institutions privilege a closer link between training and work context. Accordingly, we make the hypotheses that the activities of continuous training offered by non-university institutions have the aim of fulfilling special needs that are perceived to be necessary for the job, and are not provided by the offer of university education.

3.4. INSTITUTIONAL EVALUATION OF THE RELATIONSHIPS BETWEEN UNIVERSITY AND LABOUR MARKET

In order to grasp the evaluation practices of universities in eight European countries, a project was developed (1996-1998) in which participated Finland, France, Germany, Italy, Norway, Portugal, Spain and UK. In this project 31 European universities case

studies were carried out (Dubois, et al., 1998).

We will focus here on the results of this project that are particularly related to the evaluation of the education / labour market relationship. It is possible to sketch some ideas about the prevailing view of European universities, with regard to the education / labour market relationship and its contribution for the construction of professional competence.

We found that the evaluation of the education / labour market relationship is still in its infancy compared to the other fields of evaluation (such as evaluation of the research or of the teachers' performance, for example) and has often a somewhat discontinuous, informal and optional character. In the Finland, France, Portugal and UK, the evaluation of the relationship between work and training is included in the formal, regular and institutional evaluation systems of the universities. In other countries, it is mainly an area of optional and informal evaluation. Nevertheless, the interest by this type of evaluation seems to be increasing. Consequently one's overexaggerate the impact of the on going tendencies of the evolution of the education / labour market relationship, in Europe, both due to the increase in the unemployment rates and fast shifts in labour market. This confronts us with new challenges regard to the competencies and qualification profiles of the labour force.

Upon surveying the 31 European universities case-studies, it was possible to assert that, when taking in account the evaluation of the education / labour market relationship, what we usually do is to evaluate the relationships between the offer of graduated people and the needs of the work market, made throughout the analysis of their professional placement. Nowadays, the situation related to the types of evaluation of the contribution provided by university to the development of their surrounding environment as well as curriculum analysis of studies designed to incorporate the needs of the labour market which are not only developed but also are not taken on account.

The 31 European universities case-studies also allowed us to call the attention to the fact that the most common indicators being used to evaluate professional placement of graduates are the "facility/difficulty in getting job", the "correspondence between job and training" and the "satisfaction/not satisfaction of graduates related with their academic education". It seems to us that it would be also important to analyse the process of placement in the work market, with special attention to the insertion process of the graduates. We would like to stress the importance of a better understand of the connection between the diploma and the exigencies that emerge during the professional life of the graduates.

4. THE DEVELOPMENT OF WORK PROCESS KNOWLEDGE AND THE CONSTRUCTION OF PROFESSIONAL IDENTITY

The wpk development is necessary linked to the individual's professional performance. The process is not limited to the secondary or to the higher education, to work organisations or in the job training. The wpk involves the development of technical and non-technical competencies, which is not only the result of formal or informal learning (in school or professional context), but also it is related both to the individual personality and to the social context.

4.1. CONSTRUCTION OF WORK PROCESS KNOWLEDGE: A PROCESS RELATED TO THE MULTIPLE DIMENSIONS OF INDIVIDUAL LIFE

Professional identity is part of social identity. This means that the conception of identity as being the result of multiple dimensions (personality, gender, age, ethnicity, and cultural, political, professional background), which may be combined and articulated in several forms structuring the identity of the individual.

Therefore, it is possible to accept that the changes in one or other dimensions above mentioned have implications at the global identity. This also means that the structuring of professional identity is dependent on all the other individual and social life scenarios. The "social trajectories, the interaction that from there happen, their projects and their responsibilities have a decisive part in what the individual performs during a long time" (L.e Boundec, 1988, p.19).

Mobility or job instability and uncertain professional moments might imply changes in the identity restructuration. According Sainsaulieu (1996, p.201) "in accelerate professional mobility periods, the social identity is profoundly disturbed". Also, changes in the personal or social dimensions might have implications in the professional identity. This inter-relationship is quite evident when we analyse, for example, the professional identity upon entering adult life, the way it articulate with matrimonial and familiar life or when we analyse how the delimitation of gender identity determine the development of different roles played by boys or by girls.

In brief, to conceive the construction of wpk as being strictly dependent to the construction of identity process means that it is not independent from the life experiences of the individual.

4.2. CONSTRUCTION OF WORK PROCESS KNOWLEDGE A PROCESS IN CONSTANT STRUCTURATION

The competencies are built up based upon several social contexts, educational trajectories and training on the job, within a global process of construction of individual and social professional identity. Therefore, it is possible to consider that the construction of wpk is accomplished through a constant and dynamic process throughout the education/training, the work organisation, and in a broader perspective, the social context and the personal life. The professional identity is the result of self-reflection on the basis of the relationship among several professional scenarios and throughout different life situations. According to Dubar (1991, p.262) this process is developed in four main moments, based on an ideal professional path:

In the first moment, which corresponds to the initial training process, the individual builds his/her first professional identity; in the second moment, through integration and progressive learning of personal competencies and qualifications, identity consolidation occurs; in the third moment, the access to responsibilities originates identity recognition; in the last moment, coming the age of retirement, individual identity reach its peaks.

According to the same author, two common fundamental confrontations occur along these four moments. One of these confrontations, is that what the individual considers to be – identity for himself/herself – the identity assign to him/her by others – identity for the others – which are inseparable identity elements although difficult in terms of their mutual articulation. The other moment of confrontation is based on both the prior life trajectory and the individual plans for the future as opposed to the social system in which the individual is integrated –from which may result a virtual identity which in term may lead to a shift in the life trajectories shaping the real identity of the individual.

This approach to the identity allows avoiding a psychologisation of the concept. The professional identity is created in the interaction between both the psychological and the societal structure. Thus, “the identity is a phenomenon that emerges from the dialectics between individual and society” (Berger and Luckman, 1991, p.195).

The wpk involves non-technical competencies that mobilise psychological contents (affective and cognitive) as well as social and cultural behaviour contents which are built up over the entire individual life connected with the construction of his/her identity process.

Language is affective and cognitive, social and cultural in nature. Language in professional settings, has both a private and a public facet. Language may be said to be pri-

vate when it is devised to enable a limited number of persons to communicate with one another in a meaningful way. However, any code can be broken, and thus a private language may come to be more widely understood and/or translated in a public language. In this way language is always both a personal and a social phenomenon deeply involved in the construction of professional identity.

Let it be noted, however, that a problem is involved in endowing any code with personal and social meaning. To convey meaning language should be relevant for the construction of professional identity.

The construction of identity through meaningful language implies a professional shared knowledge, which is the base for the effectiveness of communities of practice. According to Edwards (1997) the notion of shared knowledge has three senses that should be analysed: cultural knowledge - what people knows within a given language community; pragmatic knowledge - what, when and how participants, in a practical situation, treats as shared; mutual knowledge - what individuals in interactions assume to be known by one another. This commonality of mental contents is sometimes called common knowledge or common language ground.

A combination of individualist and interactionist approaches to a professional language and its specific meaning in which is conceived as a co-ordination of action is crucial for the construction of professional identity.

The wpk is an unfinished process and is in permanent structuration to the extent that its development is strictly related to the identity - building process. That is because it occurs along the entire life path and involves the interaction between the personal and the social, the educational and the training systems, the work experience and on the jobs trajectories.

5. CONCLUSION

Our reflection led us to posit that no diploma can be taken for granted, that is a testimony that a person has acquired all the wpk needed to the specific performance of a professional function. The research already carried out allows us to point out that in the construction of such knowledge there are, at least, three essential and interdependent dimensions to be considered:

- * The first dimension takes the work process knowledge as a result of an experiential learning process to be acquired in the everyday life of work organisations. Accordly, it is necessary to explore all the modalities that make possible to improve learning in work situations. This is because the transformation of the work experiences into learning

experiences is not a direct or automatic process. Rather it involves a process of cognitive construction, modification and reorganisation of knowledge. As Pires (1998) observes “It is necessary to confront the experience and reality and proceed to an analysis process that gives it a meaning” In that process, “language can develop cognitive, personal, social and cultural competencies which allows us the reflection about the self assessment of work promoting wpk” (Oliveira, 1998).

* The second dimension to be considered takes wpk also as a result of the formal processes of learning and competencies development within universities. Consequently, it is necessary to consider education not only as a space/time for the acquisition of knowledge and techniques, but also as a space/time that contributes to the process of personal development of the individuals. This developmental process must be understood both as “personal” (development of individual capacities) and “professional” (transformation of professional activity using the new obtained resources) (Le Bouedec, 1998, p. 263).

* Finally, the third dimension is related to the difficulty to separate the “work process knowledge” from several factors related to a subject’s identity and his/her personal and social life. The professional performance involves the existence of competencies, attitudes, personal capacities and values that are in part the result of the socialisation process throughout social and familiar life. As Alaluf (1986) points out, “the behaviour of the worker under several aspects is out of the enterprise reference table. He belongs to other social groups which action doesn’t end next to the enterprise door” (p. 145). The articulation of the organisational, educational and individual dimensions is a complex task, and requires a coherent and integrated strategy of all the processes that are implied on the construction of the work process knowledge,

BIBLIOGRAPHY

- Alaluf, M. (1986). "Le temps du labeur – formation, emploi et qualification en sociologie du travail", Ed. de l'Université de Bruxelles, Bruxelles.
- Alves, M. (1999). "The construction of «work process knowledge»: the contribution of initial education at the university", paper presented at the Workshop Whole in Lisbon.
- Ambrósio, T. et al. (1994). "Formação contínua de recursos humanos de nível superior", Relatórios do Projecto Telos, FCT/UNL, Lisboa.
- Berger, P. & Luckman, T. (1991). "The social construction of reality", Penguin books, Londres (1ª edição – 1966).
- Boreham, N. (2000). "Transforming vocational curricula with work process knowledge" in Book WPK; introductory chapter
- Boreham, N. (2000). "Work process knowledge in technological and organizational development" in Report of Whole Project WPK
- Borzeix, A. (1995). La Parole en Sociologie du Travail. In *Paroles au Travail* (pp. 225 - 245). L'Harmattan. Paris.
- Dominicé, P. (1990). "L'histoire de vie comme processus de formation", Ed. L'Harmattan, Paris
- Dominicé, P. (1991). "La formation expérientielle: un concept importé pour penser la formation", in "La formation expérientielle des adultes", La Documentation Française, Paris
- Dubar, C. (1991). "La socialisation – construction des identités sociales et professionnelles", Ed. Armand Colin, Paris.
- Dubois, P. et al. (1998). "Évaluation et auto-évaluation des universités en Europe", Relatórios do projecto Evalue, Universidade de Nanterre, Paris.
- Edwards, D. (1997). "Discourse and cognition", SAGE Publications, London.
- Evans, K. (2000). "Learning and work in the risk society: Lessons for the labour market of Europe from eastern Germany", MacMillan Press, UK
- Finger, M. (1989). "Apprendre une issue – l'éducation des adultes à l'âge de la transformation de perspective", Ed. L.E.P., Lausanne
- Fischer, M. (1998). "Understanding professional competence – questions raised by the work process knowledge approach", paper presented at the Whole workshop, Siena.
- Gama, A. (1997). "Participação dos actores na formação profissional contínua em contexto de trabalho; um estudo de caso numa empresa qualificante", Tese de Mestrado, FCT/UNL, Lisboa
- Gelpi, E. (1989). "Quelques propos politiques sur l'éducation expérientielle", in Education Permanente n° 100/101

- Harrison, R. (1996). "Personnal skills and transfer – meanings, agendas, and possibilities", in "Boundaries of adult learning", Ed. by Edwards, Hanson and Raggat, The Open University, London
- Hoffmann, B. (1999). "Situated learning and communities of practice", Re-enter project workpaper. Flensburg
- Josso, C. (1988). "Da formação do sujeito...ao sujeito da formação", in "O método (auto)biográfico e a formação", DRH, Min. Saúde
- Josso, C. (1989). "Josso, C. (1991), "L'expérience formatrice: un concept en construction", in "La formation expérientielle des adultes", La Documentation Française, Paris
- Kóvaks, I. (1992). "Novas tecnologias, organização e competitividade", in "Sistemas flexíveis de produção e reorganização do trabalho", CESO I&D /Pedip/DGI
- Lammont, N. et al. (1998). "Literature Review, Work Process Knowledge in Technological and Organizational Development", WHOLE Project. TSER. Manchester
- Lave, J. & Wenger, E. (1991). Situated learning: legitimate peripheral participation, Cambridge University Press
- Lazar, A. (1998). "Langages et Techonologie: Connaissances et Reconnaissance des Langages Professionnels". INRP. Paris.
- Le Bouedec, G. (1988). "Les défis de la formation continue", Ed. L'Harmattan, Paris.
- Madelin e Thierry (1992). "Organisations qualifiantes: quelles definitions et quelle méthodes d'évaluation?", in Education Permanente n° 112
- Mallet, L. (1995). "Organização qualificante, coordenação e incentivo" in Formação profissional n° 5, CEDEFPO
- Meneses, M.T. (1996). "Formação expereincial e desenvolvimento de competências", Tese de Mestrado, FCT/UNL, Lisboa
- Oliveira, T. (1998). "Language, work and training", paper presented at the Workshop Whole in Siena.
- Onstenk, G. (1995). "Aprendizagem no local de trabalho no âmbito da reforma organizativa na indústria transformadora", in Formação Profissional n°5, CEDEFOP
- Pineau, G. (1989). "La formation expérientielle en auto, eco et co-formation", in L'éducation Permanente n° 100/101
- Pineau, G. (1991). "La reconnaissance des acquis comme passage –frontière entre les mondes des individus et celui des organisations", in "Reconnaitre les acquis – démarches d'exploration personnalisée", La Mesonnance, Paris
- Pineau, G.(1991). "Formation expérientielle et théorie tripolaire de la formation", in La Formation expérientielle des adultes", La Documentation Française, Paris

Pires, A (1995). "Desenvolvimento pessoal e profissional: um estudo dos contextos e processos de formação das novas competências profissionais", Tese de Mestrado, FCT/UNL, Lisboa

Pires, A (1998). "Competencies, work and training processes: looking for a dynamic coherence", paper presented at the Workshop Whole in Leuven.

Rolo, C. (1996) "Formação em contexto de trabalho – dinâmicas formativas das professoras de uma escola do primeiro ciclo do ensino básico", Tese de Mestrado, FCT/UNL, Lisboa

Sainsaulieu, R. (1996). "L'identité et les relations de travail" in Education Permanente, n° 128.

Wenger, E. (1998). "Communities of practice: learning, meaning and identity", Cambridge University Press

Zarifian, P. (1986). "Les approches de plus récentes de la qualification", in L'entrouvable relation formation-emploi", La Documentation Française, Paris

Zarifian, P. (1992). "Acquisition et reconnaissance de compétences dans une organisation qualifiante", in Education Permanente n° 112, Paris

Zarifian, P. (1995). "Organização Qualificante e modelos de competência: que razões? Que aprendizagens?", in Formação Profissional n°5, CEDEFOP

ued

Texto de divulgação adaptado de uma comunicação apresentada ao Congresso Mundial de Sociologia que teve lugar em Julho de 1998 em Montreal