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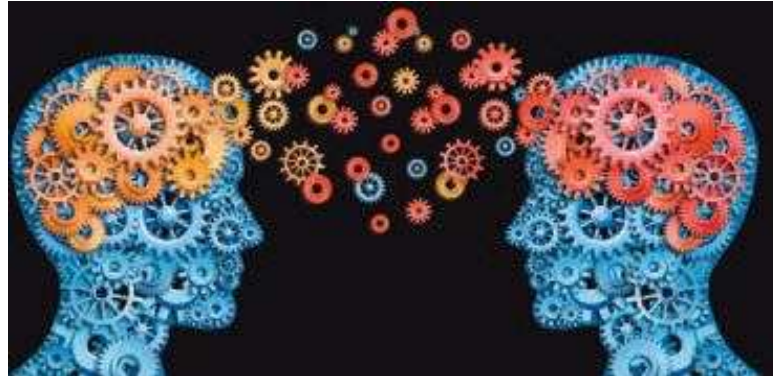
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FROM KNOWLEDGE TO COMPETENCE: THE PROCESS OF CONVERTING THEORY-PRACTICE

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ABSTRACT. This work aims to a reflection on the relationship between theory and practice in the teaching-learning processes which, in the contemporary debate of pedagogy and education sciences and, more in general, of the individual’s education sciences, plays a crucial role as it relates to the teaching and learning problems, both taken into consideration together. Starting from this assumption, the article winds along a path where the teaching-learning process is the key point that makes the knowledge building possible in view of the mobilization and capitalization of the latter, or better, the development of cognitive, disciplinary and social skills, considered necessary to the new generations in order to enter and actively participate in the current information and knowledge society.

Keywords: didactics; learning; knowledge; skills

1. Didactics between Theory and Practice

The relationship between theory and practice in the teaching-learning paths is defined as a problem of main interest within the educational-pedagogical contemporary panorama. The interaction between teaching and learning brings to a deeper reflection on the relationship between “philosophical foundation” and “scientific foundation” of pedagogy; more specifically, on the concept of education in relation to the one of instruction. In general, the pedagogical reflection looms as a meta-theoretical key intersection point of

knowledge aimed at the investigation of the complexity (and globality) of human existence: it results noticeable the polysemy of the discourse. The philosophy of education represents the way to combine a general philosophy of the human's existence and sense in society, history and world. The philosophical reflections create the epistemological substrate for pedagogy, whose field of reflection concerns the human education (education intended as "educational action"); the didactics puts at the center of its theoretical-operative reflection the interaction between the learning subject and the learning objects within the educational institutions: it is the true essence of teaching, the basis of an operational practice in which the teacher determines the effective conditions to facilitate the learning processes.

Despite the continuous claims of scientific autonomy and restrictions of the field of research, it's possible to highlight the relationship of interaction and exchange between these disciplines, whose speculations seem all to converge to a point: the educational process of the individual. In light of and overcoming of rigid restrictions, it's possible to profile a framework of thought that sees the different perspectives merging in a complementary way: theory and praxis can be considered as inseparable moments of a single educational-formative process. The didactic practice is the fulfillment of the educational practice: learning is formative when it can be part of that process of "knowledge, consciousness and culture that forms part of the itinerary of Bildung, for which the educational didactics is coessential" (Gennari, 1999: 65). The attention to the subject within the educational process is the crucial point in which teaching and learning, considered in their indissoluble unity, are understood as essential sectors of the human education that sees the contribution of theoretical reflection of pedagogy as indispensable.

According to Hans-Georg Gadamer, the modern distinction between theory and practice, action and thought, is more theoretical than practical. In this sense, the ancient but brilliant intuition of Aristotle, who states: "the practice is not antithetical to theory, because the theory itself is a form of practice" adapts to this topic of the relationship between theory and practice in the teaching-learning processes. In fact, Aristotle defines the "phrónesis" (or practical wisdom) the rationality that leads the practice, which requires experience as well as knowledge.

On the basis of the reflection by these philosophers, in any theory we can recognize the practical matrix within which it was formed and vice versa, and the path the individual can choose for the problem-solving. The major issue is not to choose between theory and practice, but it's about knowing how to interlink them by trying to reduce the gap that may arise.

Therefore, it actually results crucial to promote a reflection aimed at an educational and cultural renewal: the speed of the change that involves all areas of post-modern society necessarily lets our school system to prove

that, in order to prepare the individual to positively face the discontinuity of culture and science, the educational richness of a hyper-technological and diffused-knowledge world, it's necessary to "teach how-to-be" and "teach to learn".

Thus the task of the school system is to give a sense to the variety of information, knowledge and experiences by fostering the human, social and cultural growth of people that can fit with intelligence, consciousness and creativity into the information and knowledge society.

2. The Process of Knowledge Building

In the contemporary complex landscape, school looks like a sub-system incorporated into a larger social system with which it maintains relations of interdependence. The school education system appears, on the one hand, as an autonomous system that achieves specific performances geared to knowledge, understanding, the ability of analysis and synthesis, the development of skills; on the other hand, as a system of a social context that gives it the task of the development of autonomy and responsibility as sense carriers in a complex horizon.

Education is the self-realization of the subject-person which is socially and culturally oriented, on the basis of a group of knowledge, skills, values, and meanings in view of a horizon of meaning (Acone, 2005: 238).

The educational-school system contributes to the road towards the self-fulfillment of the subject-person and the didactic work that unfolds within it, like any other relationship among people takes form of an on-going flow of signs that urges interpretive responses. The didactic work, flowing between the two poles – teaching and learning – and acting in view of the active knowledge building, can be interpreted as a system of implications.

The heart of every educational system is in the knowledge that is able to develop through a process of interpretations and significations, which require the work of the teacher (didaxis) and student (mathetis), a complicated cognitive model where the contributions of motivation (or interest), mind (or thinking), language (or textual paths of the speech, sound, image, gesture, number) prevail. In addition, knowledge is always the result of the elaboration of culture (on a gnoseological sense) and cultures (on an anthropological sense). Finally the path of knowledge leads from the object to the subject: so to that consciousness where experience, emotion and relationship open the "personal" world to the "social" one, and vice versa. (Gennari, 1999: 57)

In this complex system of factors that act together, the didactic work that is put into practice is a work in which knowledge does not end in a simple transmission of meanings, but their reworking and a shared generation of new meanings, in view of a transforming evolution of the student within a horizon that involves meaning, value and way-to-be.

Analyzing Maturana and Varela's theories (1999), we can interpret the process by which such knowledge originates as an articulated and non-sequential process, a transformation of the disorder of the surrounding world in a mental order. The two authors' thesis is an attempt to take the concept of knowledge from the domain of objectivity to place it in the experiential world of the subject, intended as a phenomenological and biological entity that acts and interacts, and to see it as the result of a process that generates new paths, a heuristic process that relies on understanding and its creation. Learning this perspective means compensating the disorder, a dynamic event taking place within a relational domain and in which the disturbance, all the complex experiences, find their order and rearrangement through a continuous mental organization.

The most interesting aspect of this theory is the idea that the mind is a purely relational identity and that learning takes place within a relation, through a balanced relationship with the surrounding environment made of constant changes. The learning subject is an organized system with two key aspects: Identity and Organization. Learning in such a system entails a modification of its own structure with a view to the preservation of its identity, that is just the system's ability to return to its original structure, the possibility of the man to talk about himself: his ability of self-reference (deriving from the language). This process is called operational closure, or better, the system's closure into itself to restore coherence (organization) which is disturbed by uncertainty, the non-sense or the disturbance in the perception of the external reality. Through the operational closure all that seems chaotic has sense and meaning, it generates a world. In this sense, learning is an autopoietic process; it means innovation, discovery, invention.

From an educational point of view, theoretical approach shows some implications. The first is that the self-referentiality skills of the learning systems, i.e. the cognitive and metacognitive strategies, can be supported and solicited in the teaching process with appropriate teaching methods to promote the self-modification of the rules of thought in difficult situations. The second is that teaching cannot be regarded as a sequential and analytical-linear process since it's inadequate if compared to the reticular perspective underlying the learning mechanisms that we have shown.

The gap that exists between teaching, both practical and verbal, and the understanding/generating of significant learning (Novak, 2012), is open to the rules of communication as a process of building of shared meanings

and attribution of meaning. The didactic interaction cannot be explained through forms of linear causality, so the process of teaching, with certain determinism, generates predictable and homogeneous effects. Rather it selects and requires a range of paths and possible answers, and in their construction the learner subject takes active part. Teacher and student are, in this perspective, the two systems in constant interaction, acting and reacting together within a strong network of relationships (teacher-single student, teacher-class group, student-student). A network that mobilizes those cognitive and emotional resources involved in understanding and signification – so in the possibility to incorporate and rearrange an experience, an event, a given, in a broader context of attribution and further generation of meaning – which happen in the learning process. The exploration of new networking paths, the integration of new knowledge with concepts pre-existing in the cognitive structure of the subject (Ausubel, 1998), which are explained in the significant learning, are possible just if it occurs an effective communicative-relational process generating signification, thus the series of postponements and shifts with the involvement of a cognitive, emotional and experiential dimension.

In this topic, the role of the teacher is of main importance since he/she's seen as the "Builder" of intentional learning environments designed to outline recursive and networking processes rather than non-linear and segmented processes, which are essential to make students fully participate in the process of knowledge building and to ensure the unity of knowledge in view of the skills development.

In this perspective, the learning process can be seen as an opportunity to attach meaning to the educational experiences and, above all, to give value to what we know and the skills that are fostered: it's clear how the process of the knowledge co-building is coessential in a pedagogical-didactic path aiming at promoting the development of disciplinary, social and professional skills.

3. From Knowledge to Competence

The European scenario is increasingly defined by the perspective of the knowledge society: in the recommendation of the European Parliament and of the Council (2006) on "Key competences for lifelong learning", are described the skills needed by all individuals the self development and fulfillment, the active citizenship, the social integration and employability. Within this document it is included the European Reference Framework that identifies and describes the key competences that every student should hopefully meet at the end of each educational cycle.

Therefore, the matter of the promotion of specific and transversal competences becomes the criterion to guide the curriculum of the educational systems: each educational institution must promote and allow the students to consolidate the cultural basic and transversal competences, so they must aim at reaching the key competences identified at European level.

The rapid change of knowledge that characterizes our society inherently involves the need to relate to new situations and problems; in this context, school, as an educational agency par excellence, cannot fail to fulfill its task of providing a horizon of meaning to the multiple and fragmented experiences and knowledge of students. In this sense, Edgar Morin (2000), coining the quotation “educational teaching”, states that the mission of this teaching is not to transmit a pure knowledge, but a culture that allows to understand the current “planetary” human condition. Thus, a culture that knows how to help children and teens to develop their own identity and to be able to stay in the world; it must be also able to interconnect knowledge, by avoiding to place barriers among the different visions of the world.

In fact, the attitude of the western world towards the complexity of reality has been to simplify and break it down: so, a division between humanistic and scientific culture, which, in turn, have been divided into disciplines. If knowledge is so divided is not adequate to tackle a multidimensional reality and solve the resulting problems. Karl Popper (1970), on the other hand, argued that there are no disciplines: there are only problems and the need to solve them.

It is therefore desirable an intersection between scientific-technological rationality and humanistic dimension to unify knowledge, educate the “citizens of the world” and provide interpretive tools to deal with the uncertainty and complexity of the contemporary society.

In this regard, to fully enhance the unity and the formative value of knowledge, it is necessary to avoid the risk of a merely transmissive education which accentuates, in cultural terms, the disciplinary fragmentation. We can therefore deduce that the school learning must prove to be not only an accumulation of knowledge, which leads to a limiting approach to the educational potential of the disciplines, but it must be the ability to generalize, transfer and use the knowledge acquired in real contexts, with a view to developing cultural and social competences.

The theories of constructivism and socio-constructivism, the significant learning, the authentic learning and the situated cognition, show that students more understand and assimilate when they are dealing with real situations since competence is not just theory, as it is not the simple application of a theory: it's action and reflection at the same time. The competence to express needs a concrete context. This context can be disciplinary, professional or

existential: it can be the contents of knowledge, a past experience, a learning environment, whether real or virtual.

Therefore, competences are also strongly linked to the past since each experience is conditioned by the previous ones.

In summary, the competence can be interpreted as the result of the intersection of four factors: *knowledge*, *experience*, *reflection* and *action*.

4. Cultural Matrices and Disciplinary Approaches to the Concept of Competence

The reflection on competence has a good cultural background with its own history and a complex mosaic of contributions on its nature and main functions. It is a complex concept that refers to something that lies in the depths of subjectivity, even if it leads to a variety of observable behaviors, and it's the object of a boundless investigation and literature by many disciplines (psychology, pedagogy, sociology, philosophy, etc.). What is evident in the concept of competence is the absence of a theoretical reflection sufficient and able to rigorously support all practices and intervention models based on competence. There seems to be a sort of tacit consent in respect of the meaning evoked by this term, also as a result of its wide use in the common language and sense.

Since 1965, when Noam Chomsky first introduced the concept in linguistic competence by defining it as the ability to produce a language and distinguishing it from performance, referred to the actual use of the language in practical situations, the debate has broadened and extended in multiple disciplines, with the contributions of many experts. Very interesting is the debate involving the education sciences.

In Italy, the debate on the concept of competence develops in parallel to the process of renewal of the education, formation and work system, aiming at breaking down the organizational and cultural barriers that have always separated the formal education from the vocational one. The supervening institutional and cultural need at legislative level, to make the two systems synergistic has led to the adoption of the competence approach and the centrality of the individual. It has come to the fore the plurality of dimensions that characterize the learning process and that lead to promote the individual's ability to operate in relation to the context, by integrating and applying formal, informal, experiential, theoretical and procedural knowledge; to monitor their work and change it – if appropriate – depending on their purpose.

This clearly requires a reorganization of the knowledge at curricular level: reflect on the contents in terms of tools to get the development of

competences involves a reconstruction of the foundations of the disciplines, the procedural dimension of knowledge and the cognitive strategies.

It is evident an aspect of the key competence and common to all the summarized approaches: the insistence on its manifestation “in use”, “on action”, by adapting to specific contexts and that results necessary to pursue specific objectives. It is important to emphasize this “connection” of the competence to specific purposes and situations so not to confine it to a simple technical knowledge, the mere applicable knowledge of theoretical principles that may lead to exclude the attention on the cognitive and emotional processes concerning the sphere of reflection and creation.

A contribution to the debate on the emerging concept of competence “in use” is also by Howard Gardner (1987) who, while not explicitly speaking of competence and showing a clear preference for the cognitive sphere in the explanation of the human behavior, he develops a theoretical multifaceted complex that includes cognitive abilities that had been poorly considered before. The innovative aspect of Gardner’s ideas lies in the refusal to accept the dichotomous classification according to which people would be “smart” or “unsmart” and in the introduction of the concept of multiple intelligences, which demolishes the notion of the immutability of the intelligence quotient and opens to the existence of different types of intelligence (*formae mentis*) more or less developed in all human beings. The best achievable result by human beings is, according to the same author, the building of a well developed sense of the self, a kind of supreme capacity overseeing and presiding over other forms of more partial intelligence.

This reasoning also includes the contribution by Daniel Goleman (2001; 2005). Drawing McClelland’s criticism on to the tests for the measurement of the IQ and their poor predictive capability, and referring to Gardner’s concept of multiple intelligences, he explains that the reason why individuals with low scores give good performance and those with high scores fail is to be found in those capabilities that are under the heading of emotional intelligence, so the:

ability to motivate oneself and persist in pursuing a goal despite the frustrations; to control the impulses and delay gratification; to modulate the own moods avoiding that suffering does not let us think; and also the ability to be empathic and hope. ... The emotional aptitude is a meta-skill, because it determines how well we make use of our other skills – including the purely intellectual ones (2001: 54–56).

The emotional intelligence determines the individual potentialities to learn practical capacities based on the five elements that compose it: self-awareness, self-control, motivation, empathy and skills in the interpersonal relationships. The emotional skills show how, we are able to translate such potentialities

into real capacities in order to face the different situations of everyday life. These can be classified into groups, each one based on a particular capacity of the emotional intelligence, and they are essential to succeed.

Here it reappears the contrast with the traditional education where knowledge and behaviors, knowledge and ability required by the context are rigidly separated. We cannot avoid mentioning Knowles who places at the “highest level of competence the ability of continuous, self-managed and lifelong learning: the ability to continually anticipate new requirements and change in order to avoid obsolescence” (1996: 118); and then again, in relation to the tasks of education, Knowles imagines “an educational system generating cooperative people who consider themselves global and very creative citizens that are self-directed in learning” in a not-too-distant future (p. 118).

Therefore, he refers to an educational system consisting of “a set of learning resources” aimed at all ages of life, a lifelong learning resource system, imagining a spiral of learning projects that become more complex with the advance of the stages of life and the multiplication of roles.

From the exposed considerations it takes shape what we might define the paradigm of competence, a complex construct that defines a multiplicity of resources that mobilize and relate between them in a positive synergistic way, rather than by summation. It is clear that competence is not only attributable to a set of theoretical knowledge; it is not a simple applicative knowledge, nor it just concerns the sphere of the emotional intelligence. It's not sufficient a person's knowledge and potentiality to make a competence. It's important as it's the *predictor* of the successful performances in the vocational activities and both at emotional and social level. It goes without saying that, if understood in this way, it's no more an accumulation, but a set of capacities that combine in relation to the needs of the application context.

The competence is reflected in the action and is practiced *in a situation*, a given context. These are the considerations by Guy Le Boterf, one of the leading experts at international level (1994). He reiterates that competence does not lie in the resources to be mobilized, but in their mobilization that does not require their simple application, but also their building.

Therefore it's a concept that refers to a dynamic reality, a process rather than a state, and to the idea of a contingency: the competence is contextualized and finalized, inseparable from the conditions of its implementation. This leads it to the ability to analyze and problem-solving in a specific context: knowing how to act in a context means evaluate and adapt to it. In other words, it means to be flexible. This means that competence changes according to the evolution of the situation within which it is used through the combination of the different elements that compose it, since “être com-

pétent, c'est savoir transférer" (1994: 22). We are not competent if we limit ourselves to the execution of a single repetitive task; we are competent when we are able to learn and adapt ourselves in order to solve "une classe de problèmes ou pour affronter une catégorie de situations, et non pour un problème ou une situation" (p. 22). Thus another feature of competence is portability.

In summary, competence is mobilizing the selected, combined and integrated knowledge. Le Boterf (1994) distinguishes them in:

- theoretical knowledge: the concepts, assimilation schemas, disciplinary knowledge, the *knowing what*;
- procedural knowledge: the rules for acting, the operational knowledge according to an action to be carried out, the *knowing how*;
- formalized know-how: the practical application of procedural knowledge, the management of a procedure, *knowing how to do*;
- empirical know-how: knowledge that derives from the action, from practical experience;
- social know-how: skills, personal qualities, values, emotional intelligence.

To this list of knowledge, the author adds the meta-knowledge, defined as the individual's knowledge on his own knowledge, capacities, and ways of acting. They are essential for the competence because they allow the subject to manage and control his/her actions: it is only when he/she's able to distance himself/herself from his/her cognitive functioning that can it's possible to guide and refine him/her. The meta-knowledge allow to manage the own learning by switching from perception to apperception, i.e. the awareness of the personal cognitive functioning.

They derive from the Piaget's stage in which the subject comes to distance himself/herself from the actions that he/she makes and to describe them, but it's a distance that distinguishes itself from the reflection on the subject of the action. In fact, if the meta-knowledge allows to describe the performing know-hows, it's through metacognition that we can outline the way in which the know-hows are described. This new separation is at the basis of the process that allows the learning-to-learn, which is possible through three levels of action:

- 1st level: implementation of the action;
- 2nd level: verbalization of the action carried out at 1st level;
- 3rd level: the clarification of the way in which the subject comes to the 2nd level: the subject becomes aware of how he/she takes awareness. It is the latter that makes possible the learning-to-learn.

5. Knowledge, Competence and Learning

It is very difficult to keep the discussions on competences separate from a more articulated discourse on knowledge and learning. Competence and knowledge are closely linked, since showing the ability to do something seems to assume that the individual possesses some kind of knowledge on which he/she ‘bases’ this ability; learning is understood as a dynamic process of knowledge acquisition and transformation, thus a competence process.

The close link between knowledge and competence has been clearly brought to light by Polanyi in his brief essay *The tacit dimension* (see Rossi, 2006, *Dalle competenze individuali alle reti di competenze: un percorso teorico*, at <http://www.officinaemilia.unimo.it/elaborati/rossicompetenzeindividualiereti.pdf>).

Here the author has highlighted the importance of the tacit, not expressible component of knowledge, whose acquisition depends on the active participation of the learning subject. The tacit knowing assumes that there are two terms of knowledge; a distal one, on which we focus our attention, and a proximal one, which is necessary to understand the first term, but on which we don’t focus our awareness. In other words, the tacit knowing enables the person to perform behaviors allowing him/her to achieve the desired purposes, without forcing him/her to move its awareness from the action that he/she’s performing to concentrate on the details of the behavior itself. It is a fundamental component of “knowing how to do” something and is, therefore, inextricably linked to the individual competence.

An interesting dichotomy, quoted many times in literature and that has become part of everyday language, is the one between “knowing-what” and “knowing-how”, proposed by Ryle in 1949 (see Rossi, 2006), which, in fact, anticipates the intuitions by Polanyi and proposes this effective terminology to distinguish between knowledge, which is an abstract understanding of a situation, and another kind of knowledge that enriches the first of the skills that are necessary to act.

Polanyi makes an interesting clarification on aspect of the “know-how” of the individual, so on the tacit dimension of knowing, by highlighting how the development of competence requires practice and active participation by the learning subject. Also the evolutionary psychology has given us useful tools for understanding the processes of development of individual competences.

In this regard, it’s of main importance the contribution by the Russian psychologist Vygotskij (see Rossi, 2006), in particular for what concerns his reflection on cognitive learning and development of the child that he explains in the essay *Thought and Language*. Here, in addition to developing as main theme a thorough reflection on the semantic nature of the relation-

ship between thought and language, he highlights the fundamentally social dimension of learning.

According to the historical-cultural psychology by Vygotskij, the development of higher forms of thought and higher cognitive processes is inseparable from the context of social relationships that support child from the earliest age. The most important aspect of the psychologist's reflection on competences is the importance that he attaches to imitation as a learning process that mainly takes place in the context of the interactions with adults or with children to a more advanced stage of cognitive development.

During the childhood development, the learning ability of the child are defined by a "zone of the proximal development" that identifies those competences to which the baby is already quite close, but that he does not already possess and which, however, he can easily develop through imitation when with other more expert individuals.

Underlying this question there's a conception of knowledge as a phenomenon that cannot be understood in terms of pure performance. The reflection on competence is permeated by a vision of knowledge that always lies, at least in part, in the context of actions and interactions (among people and between people and things) within which it is "implemented". Much empirical evidence suggests that not only children, but also adults learn by performing actions and that knowledge that is acquired in this way, is specific to the performing action.

Clark in *Being There: Putting Brain, Body and World Together* again of 1997 (see Rossi, 2006), highlights that what is perceived in each moment is conditioned by the opportunities of action of that specific moment and that the limited internal representations that the mind uses to guide the action are not "recapitulations" of the external reality, but they are specific control structures for that action and context.

Therefore, talking about individual responsibility leads to consider the individual's interactions with others and the surrounding environment, in particular with the cultural artifacts that are in his world. A rich contribution to the understanding of these dimensions of competence is the one by Etienne Wenger of 1998. He studies learning as a social situated activity: in his opinion, it is not only a mental process, but it's a complex phenomenon that involves, on the one hand, the development of "doing" (practice) by the individual as part of a social context and, on the other hand, the social negotiation of the meaning of that practice that contributes to the development of the identity and the individual himself. Finally, for the person, learning means being able to interact with the world in ways that he/she interprets as significant. But how does this learning happen? Wenger argues that the individual learns and significantly interacts with his/her own environment thanks to two processes: his/ her participation in the social inter-

actions (participation) and the reification of his/her experiences to which he/she confers the status of “things” (reification).

The locus of the individual learning is what Wenger calls communities of practice, i.e. the community of people with whom the individual interacts while carrying out a particular activity and within which the meaning of that “practice” is negotiated. The meaning itself of being “competent” is subject to negotiation by the community. According to Wenger, the participation in a community of practice is a fundamental component of any form of learning, it is in the nature of learning; then we must not see these communities of practice as “ideal places”, but as a way of acting of people in the world, in any context and place. The communities of practice exist until the interactions among the participants allow the social negotiation of the meaning of their actions.

The interest in the relationship between the individual and the context has always been present in the philosophy, psychology and anthropology sciences. A pedagogical perspective on the cognitive and learning processes, based on the theoretical assumptions of constructivism, socio-constructivism, significant learning and the situated cognition, therefore it cannot develop without taking into account the complex network of interdependencies between individuals and environmental and socio-cultural systems. The use of the term context (from the Latin word *contexere*, “to interweave”) perfectly gives the idea of interaction and mutual exchange among all the elements that contribute to the learning process, a systemic relationship where different elements, metaphorically seen as inextricably interwoven “threads”, come into play.

In this sense, the forms of organization of the cultural and participation activities are the horizon of meaning of the teaching-learning processes, a decisive horizon for the development of the cognitive and social processes, since learning is not just a way to learn the world, but it means “being-in-the-world” (Heidegger, 1968) by taking active part into it. The theoretical reference lies essentially in the instance we learn within a dimension of reciprocity, and so in a context of social participation.

In this regard, it may be advantageous to make reference to the study on the situational competence (Collins, Brown and Newman, 1989), affirming that becoming competent means becoming experts and thus adopting, within a range of resources, those most appropriate ones to the situation. Basically, it needs that the expert-teacher promotes the students’ participation in the knowledge building by providing a plurality of cultural artifacts: this involves a careful planning of the learning situations. So, the planning of the contexts represents an important and decisive task that cannot be improvised and performed individually by the teacher of the class, but it must be central and collectively negotiated. The problematic nature of the tasks, the

reference and connection with the developed individual and collective assets, the setting of knowledge in contexts of use seem to be the essential requirements from a methodological point of view. In order to understand, it is therefore necessary to experience. From this point of view, the situated cognition approach suggests that learning is possible through the participation and direct interaction with an environment that is able to arouse a genuine interest in the learner. Learning means essentially acquiring the ability to use, in a competent way, the conceptual and material tools available in a given context.

Learning requires above all the performing of authentic activities in an inherent cultural context (Brown, Collins, Duguid, 1989). Planning learning environments requires a particular attention to the social aspects that direct the development of competence. It is about organizing things so to give space to a strong interaction among pupils, the different interpretations of the task, the availability and use of materials, the discussion and negotiation between peers, the help to verbalize and represent ideas and thoughts; It also needs to promote a meta-cognitive reflection on the different adopted solutions, experience and alternation of roles between teacher and pupil, turn the mistake into opportunities for re-orientation.

In summary: carefully planning the learning environments may foster that transition from the external regulation to the self-regulation that Vygotsky identified as a condition of learning aiming at becoming a personal resource.

Enhancing the experience and knowledge of the students, promoting collaborative forms of learning, implementing the exploration and research-oriented educational activities in labs, are some of the methodological principles for an efficient didactic aimed at promoting cultural, social and metacognitive skills.

6. The Assessment of Competences

Everything that has been stated in the previous paragraphs has highlighted the polymorphous nature of the concept of competence, which requires more analytical perspectives for its assessment.

Within the school system, the evaluation has always had a high symbolic value: it is closely related to the historical-cultural moment and the relationship between education and society, proved by the rules which have been implemented over time. The pedagogic and didactic relevance of the evaluation is especially evident in a discourse on the competences building, underlining the need to combine quality and effectiveness of the education system and the educational development of students.

The assessment of the competences may make use of an analytic and general method. During its building process, it is useful to make use of the

analytical mode, as this makes it possible to break competence in its individual parts and evaluate each component in order to detect any gap and work on them.

The assessment of the competences involves the assessment of knowledge, its mobilization, the action plans, and the use of metacognition. For this purpose it's necessary to make use of different types of achievement tests, because each one allows detecting different elements. Together with the achievement tests it needs to make use of other tools such as: the systematic observation that constantly detects the improvements and difficulties of the student; questionnaires, through which it's possible to investigate the attitudes, opinions, etc.; the meetings, group works, etc.

At the end of the educational process it's appropriate to assess competence as a whole. For this purpose it can be used the method of:

triangulation, typical of the qualitative methodologies, for which the detection of a complex reality requires the activation and comparison of multiple observation levels to allow an articulate and pluriperspective reconstruction of the object of the analysis (Castoldi, 2009: 69).

This method, which allows to calculate the distances between two points by exploiting the properties of triangles in mathematics, in social sciences it enables to appreciate the properties of a phenomenon by comparing the manifestations obtained through different instruments and observational perspectives.

A multi-method allows a really valid and reliable knowledge. It's obvious that a competence can be analyzed from different perspectives; so, to make an evaluation effective and efficient it's necessary to find a balance among validity of observation, analysis and feasibility perspectives (time and resources).

According to the principle of triangulation applied to social sciences it's possible to assess competence by taking into consideration three perspectives suggested by Pellerey (2004): subjectivity; intersubjectivity; and objectivity.

Subjectivity concerns the meaning that a person attaches to a particular action, the way he/she sees himself/herself in relation to the problem to be solved, his/her sense of adequacy, how he/she feels ready to solve a new and unexpected situation, etc. In brief, it allows the subject to contribute to the evaluation of his/her educational path and achievements, it offers a real opportunity for the student to move away from his/her point of view in order to analyze his/her path. This operation, carried out through metacognitive processes, allows a greater awareness of the own work and, therefore, the assessment becomes a resource for learning.

Intersubjectivity concerns the expectations of the society in relation to the subject's ability to solve a problem. This sphere involves the people

closest to the person who must show a competence, those who can perceive and judge a behavior. It concerns the hetero-assessment, so the tools used for this assessment are: observation protocols, interviews, feedbacks, and all that those subjects involved in the educational process can provide (teachers, peer's group, etc.).

Thus intersubjectivity goes beyond the assessment carried out at school, it investigate how people coming into contact with the student see the competence he/she has shown. We can consider three aspects:

1. the teachers, who work with the students every day, have the ability to carry out observation and assessment checklists and express opinions;
2. the students' parents can provide important information on the manifestation of a competence in extra-school contexts, so in real life. This information may be collected through teachers-parents meetings, or through questionnaires;
3. the peer's group that shares the same experience every day. This kind of assessment, concerning the non-technical aspects of competence, has a high educational power since they allow the students to confront themselves with the peer's group. The means used are: rankings, marks, etc.

Finally, objectivity refers to the concept of measurement, i.e. the shown competence must be observable and measurable, only in this way it's possible to verify the successful acquisition and its level of mastery, so this dimension relates to the analysis of the performances. Verification tests, allowing to observe both the final product and the process through which a problem is solved (for example, through a simulation), are used to assess this dimension.

Objectivity aims to test the truly provided performances in relation to a specific task and, to do this, it first deals with stimulating the individuals through the planning of authentic and also distinguished tasks, since the subject should use his/her resources to solve problems or perform tasks that are directly related to reality. Thanks to these tasks, among other things, it's possible to collect observable and measurable data. The planning of authentic tasks makes it possible to test not only the subject's knowledge but also his/her level of mastery of a specific competence.

To sum up, an authentic task proposes the solving of problems directly linked to reality, the proposed tasks can be carried out in a 'real' or simulated context. Secondly, they must show complex stimuli that allow to go beyond the single disciplines to strive for a transdisciplinarity. Finally they have to motivate students to use their own resources to achieve the required task.

Glatthorn (see Castoldi, 2009: 105) defines the authentic tasks as "complex problems and open spaces to students as a means to show the mastery of something". He refers to:

- “complex” problems, then to more or less complex issues that seek a solution;
- “open” problems, because they don’t provide a standard solution, but the mobilization of the individual’s resources in order to reach a new and original solution. The solving of these problems involves the use of the complex thought, which is different from the simple thought since, as the French philosopher and sociologist Morin highlights, it mainly uses two logical operations: reduction and disjunction. “The complex thought ... implies a thought on our own procedures and, at the same time, on our own contents...What we are defining complex thought includes recursive, meta-cognitive and self-correcting dimensions and all those other forms of thought that imply a reflection on our own methodology while, at the same time, they are applied to a content” (Lipman, 1991: 23–24).

To evaluate competence, from the objectivity perspective, it needs to take into account the following aspects:

- contents, including the subject’s declarative, contextual and procedural knowledge;
- mobilization, thus students must not only possess knowledge but they must learn to make reference to those useful ones for solving the problems;
- action plans, or better, the strategies used to solve a problem; to be efficient, they must have the following characteristics: speed, automaticity, power and originality;
- metacognitive processes, therefore students must learn to develop the awareness of their own cognitive processes in order to always control both the learning process and the action.

In terms of didactic assessment, the professionalism of teachers must ensure the complementary implementation of the formative, summative and diagnostic functions in order to monitor and regulate the teaching-learning paths, in view of the achievement of the disciplinary, cognitive and formative objectives with respect to the desirable path towards the competences building. Thus assessment is a complex and holistic process, it’s not only necessary to orient students during school, but it also needs to plan and build educational interventions. More specifically, it seems appropriate to stress the invaluable role of the formative assessment as a tool of didactic fine-tuning, supporting the different stages of the educational process and controlling the quality and student’s achievements. The formative aspect of assessment seems to be fundamental in the building and management of the teaching-learning process, representing an essential feedback both for teachers, who can modify and adapt their strategies, and for pupils, who become aware of their own abilities, by triggering a reflective and metacognitive learning process. Thus the shift from an “assessment of learning” to an

“assessment for learning” (Castoldi, 2009) gets the student involved in his/her cognitive path, allowing him/her to understand the criticality of his/her cultural development. In this direction, it is necessary to make an authentic assessment (Wiggins, 1993; Comoglio, 2003) which must be able to trigger processes of reflection and self-regulation of the teacher’s didactic action and the students’ learning, considered as active developer of his/her progresses. In short, an assessment is formative when school makes use of it when it “teaches how to learn” and “how to be” by presaging, in addition to the educational outcomes in terms of expected learning standards, a description of the competences adequate to the targets set at national and European level, by improving the students’ performances and, those of the whole school system in general.

REFERENCES

- Acone, G. (2005), *L’orizzonte teorico della pedagogia contemporanea. Fondamenti e prospettive*. Salerno: Edisud.
- Ausubel, D. (1990), *Educazione e processi cognitivi*. Milano: Franco Angeli.
- Brown J. S., Collins A., and Duguid P. (1989), “Situated Cognition and the Culture of Learning,” *Educational Researcher* 18(1): 32–42.
- Castoldi, M. (2009), *Valutare le competenze. Percorsi e strumenti*. Roma: Carocci.
- Comoglio, M. (2003), *Insegnare e apprendere con il portfolio*. Milano: Fabbri.
- Gadamer, H. G. (2002), *Verità e metodo*. Milano: Bompiani.
- Gardner, H. (1987), *Formae mentis. Saggio sulla pluralità dell’intelligenza*. Milano: La Feltrinelli.
- Gennari, M. (ed.) (2006), *Didattica generale*. Bergamo: Bompiani.
- Goleman, D. (2004), *Lavorare con intelligenza emotiva*. Bergamo: Bur.
- Heidegger, M. (1976), *Essere e Tempo*. Milano: Longanesi.
- Le Boterf, G. (1994), *De la compétence: Essai sur un attracteur étrange*. Paris: Les Ed. de l’Organisation.
- Knowles, M. (1996), *Quando l’adulto impara. Pedagogia e Andragogia*. Milano: Franco Angeli.
- Lipman, M. (1991), “Thinking in Education,” *Bulletin* 159: 23–24, New York, in Striano, M., *To a Complex Thought in Education*, at <http://lgxserver.uniba.it/leisfibollettino159striano.htm>
- Maturana, H., and Varela, F. J. (1999), *L’albero della conoscenza*. Garzanti: Milano.
- Morin, E. (1993), *Introduzione al pensiero complesso*, trad. it. Milano: Sperling & Kupfer.
- Morin, E. (2000), *La testa ben fatta. Riforma dell’insegnamento e riforma del pensiero*, trad. it. Milano: Raffaello Cortina Editore.
- Novack, J. (2001), *L’apprendimento significativo. Le mappe concettuali per creare e usare la conoscenza*. Trento: Erickson.
- Pellerey, M. (2004), *Le competenze individuali e il Portfolio*. Firenze: La Nuova Italia.

Popper, K. R. (1970), *Congetture e Confutazioni*. Bologna: Il Mulino.

Rossi, F. (2006), "Dalle competenze individuali alle reti di competenze: un percorso teorico," at <http://www.officinaemilia.unimo.it/elaborati/rossicompetenzeindividualiereti.pdf>

Vygotskij, Lev S. (2000), *Pensiero e linguaggio*. Bari: Laterza.

Wenger, E. (1998), *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.

Wiggins, G. (1993), *Assessing Student Performance*. San Francisco, CA: Jossey Bass.

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