

AUTHENTIC EVALUATION OF COMPETENCE

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Abstract: Describe competence is a problematic operation that depends on the context and, at school, on the disciplinary character involved. It is believed that the competence is inherent to individual and that this represents his knowledge, experiences and abilities (Le Boterf, 1992). According to social constructivist model, competence refers to the subject intimate mental processes, that allow to break a critical situation and then implement original strategies for solution. McClelland (1973) to whom is attributed the authorship of word, believes that the competence needs motivation, occurs in a context and is achieved by means of appropriate behaviors. Particularly at school, *active teaching* strategies using the competence to indicate the student's ability to independently solve a problem, deploying their knowledge in practice (Pellerey, 2004). To assess the competence you need to design tests of *authentic assessment* that encourage students to active their knowledge to solve complex tasks.

INTRODUCTION

New demands of contemporary society, justified by compelling progress of science and technology have profoundly changed the dynamics of the interpersonal relationships. This has produced a significant change in the relational matrix in which individuals are included since childhood. Learning process is supposed to be re-designed and implemented including this transformation. To this day, knowledge is a resource that can be used for work or business, but it is also the basis of interpersonal relationship dynamics. Contemporary people need to have an expertise that distinguish the professional skillset, but also should be provided with greatest flexibility to easily adapt to the changing needs of working environment and social interactions. That being so, knowledge represent the essential structure in order to develop a multi-disciplinary field of knowledge, which allows to render the reality and as a result being able to deal consciously on it.

RESEARCH

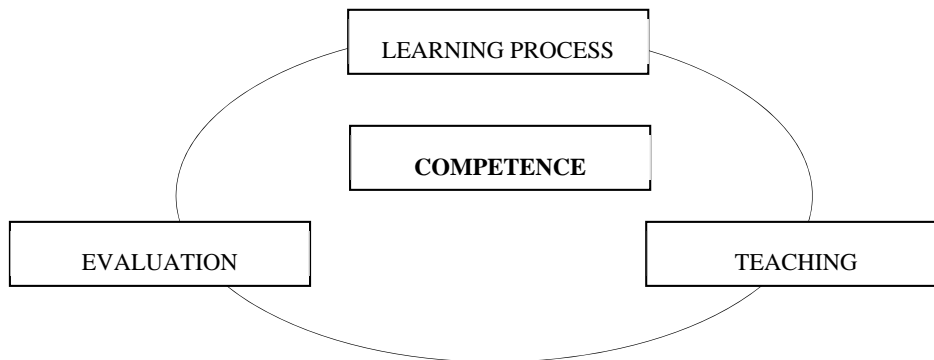
The gap that exists between school learning and out-door learning was discussed in a paper by Resnick (1995), where the author exposes the difference between academic knowledge and its impact on daily life.

1. Schoolwork requires individual performance while mental work outside is often shared socially;
2. the school requires a thought-free media, whereas outside we make use of cognitive tools or artifacts;
3. the school grow symbolic thought in the sense that working on symbols, while outside of the school the mind is always directly affected by objects and situations;
4. in school are taught skills and general knowledge, while in outdoor activities dominate specific skills related to the situation.

Most of the knowledge sent at school is theoretical and parted from context. The knowledge learned in real life situations, it is instead located and based on concrete action. The distance between these two types of knowledge do not replay the professional and working environment: that's why it is necessary think and promote a kind of learning not separated from the reality that students, who have become citizens, will have to compete. Castoldi (2009) believes that the most important innovation of the last fifteen years in teaching has been the introduction of the construct of competence. The term is not intended to replace existing terminologies, or added to the list of words used as mere labels. The construct of competence carries with it a substantial change in the learning, but also in the teaching going to affect the structure of the training model school (Fig. 1).

It is hard to define in a perfect and complete way the construct of competence: in fact, the use of the term in a lot of fields of knowledge influences its definition. Particular in education, competence refers to disciplinary character involved or at the specific task required. Based on etymology, the term competence derives from the late Latin *competentia*, which follows the verb *competere*, composed of *con-* and *competere*, that properly means "go, ask together". In general, it indicates the individual ability owns by culture or by experience, to talk, to discuss, to comment on specific topics as well as the power of action that an individual can exercise.

Fig. 1. Training model school based on competence



Competence is characterized by two forms: on one side, it indicates the subjective capacity about a field of experience and on the other side, concurring with, it indicates the ability of the individual to make judgments freely. This second meaning of competence's term affects the administrative law area of interests. By the way Le Boterf (1992) believes that competence can be defined as a *conceptual chameleon*. Consider competence as a practical ability to solve problem it is intuitive for those who believe that in a performance are involved knowledge and skills, and on the other side exquisitely personal traits. In this particular case, the competence is realized after the individual has used appropriate strategies for the solution of a problem and its evaluation is therefore next to the result. Individual skills are commensurate with the context in which they are implemented, and context can influence the level of individual performance used.

Due to its complexity, the argument has led several definition in each specific subject, especially in work environment. Quaglino (1990) judges that competence can be understood as the professional quality of an individual, in terms of knowledge, talent and abilities, professional and personal skills. Le Boterf (1992) believes that the competence is the whole spectrum of knowledge, skills and behaviors who a person employ in a professional area. The first systematic definition in teaching about competence's construct can be ascribe to *behaviorism*. According to behaviorism's studies, competence has been identified as the result of action that can be observable and measurable. Since the 70s of the last century onwards, the study of the competence's concept has resulted in a large literature that, as proposed by Mulder, Weigel and Collins (2006), can be summarized in three main directions of evolution.

- *From the simple to the complex*. Competence is an improvement of the knowledge already owned by subject that involves the activation of knowledge, skills and dispositions. The process engage the cognitive, the motivational and the emotional dimension.
- *From outside to inside*. According to this process, knowledge draws attention to all those subjective dimensions that are not directly observable outside, but that form the basis of individual behavior.
- *From theoretical to pragmatic*. Competence is specifically assumed and it is related to a given context, losing its general sense. Competence is identified with the subject's ability to use operational strategies for the solution of the problem related to specific culture and contextual dimension.

It's still Le Boterf (1990) who provide a concise statement of the evolution of the competence's construct supporting that it manifests the transition from the *know-how* to the *be able to act*, underlining the indissoluble relation that competence has to the context of action in which it is fielded. It is possible to define competence as the ability to perform a task in a satisfactory way, to apply their knowledge in practical situations, problem solving, and/or produce new solutions or objects (Notti, 2002). To let someone know about the complexity of competence's construct and about the long tradition of researches that was interested on topic, it is needed to use a multi-dimensional approach and it has to consider all the dimensions involved in the cognitive skills training. First, the basis of the skills are situated in a solid and structured network of knowledge. The knowledge which occurs to individual is:

- *Declarative knowledge* that represent the *know-what* (names, meanings, etc.).
- *Knowledge of procedure* related to *know-how*, who describe the operational setting to perform specific tasks.
- *Conditional or contextual knowledge* who setting out how to coordinate the procedural and declarative knowledge.

In support of the knowledge's network that are acquired by the individual, whether in formal learning both natural ones, there are placed cognitive processes. Mason (1996) speaks in this connection of the *triple alliance* that is established between cognition, motivation and metacognition. Cognitive processes and knowledge allow the individual to break down, understand and solve problems in a consistent and effective way. It is interesting to note how the person, time to time, always in front of new problems, in specific contexts, is able to assess the existence or otherwise not, of characters common to experience already resolved. Wittgenstein (2009) spoke of *family resemblance* when he noted the "relationship" between linguists practices, related to each other by a network of analogies; in this case it is more appropriate to talk about *family of problems* (Gillet, 1998). That being so, the definition of competence proposed by Gillet (1998) seems to be suitable in this study framework. The author defines competence as a organized system of conceptual, procedural and contextual knowledge, also by metacognition, in operational response schemes constructed on base of experience and with exercise (script, action plans) designed to identify and solve family of problems with an efficient action (Gillet, 1998).

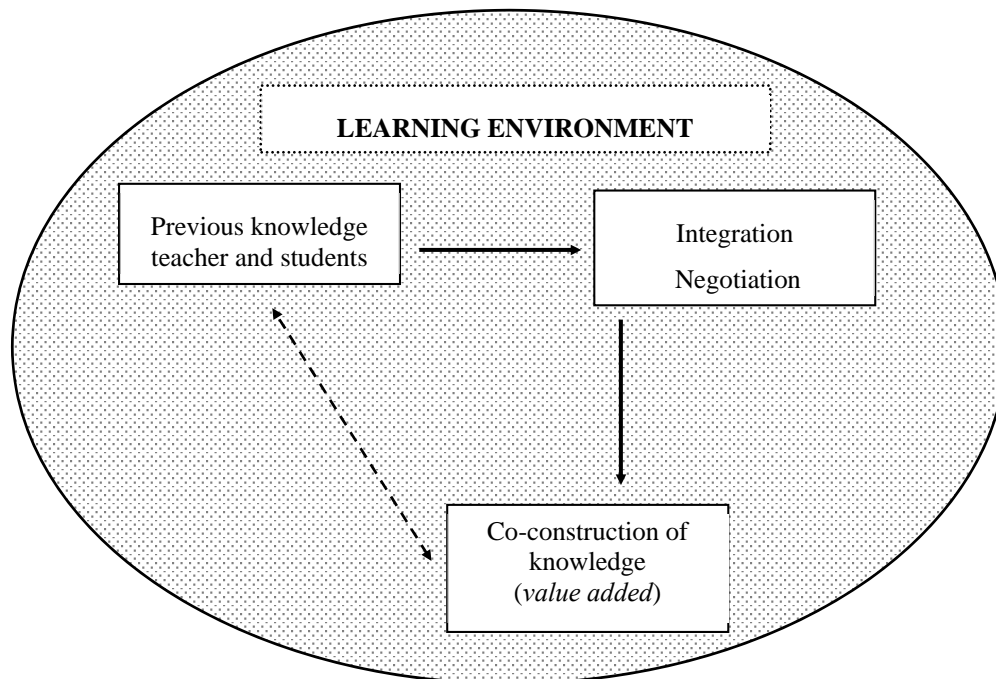
Because the construct of competence interest many subjects we believed that competence is inherent to individual and it represents his knowledge, experiences and abilities (Le Boterf, 1992). McClelland (1973) to whom is attributed the authorship of word, in his article *Testing for Competence Rather Than for Intelligence* (1973) says that the measurements in the professional environment, tend to be made by the intelligence tests that are not responsive to the needs of the real: "neither the tests nor school grades seem to have much power to predict real competence in many life outcomes, aside from the advantages that credentials convey on the individuals concerned" (McClelland, 1973, p. 11).

The American psychologist, discussing the need and the opportunity to use intelligence tests to assess the ability of a worker to reply the needs of its professional environment, he introduced the competence's concept. At the base of the construct McClelland puts motivation, capable of directing the actions/reactions of the individual to complete the performance that is required. Based on considerations of McClelland, many later writers have built their own theoretical framework about the construct of competence, providing interesting insights. Lyle and Signe Spencer (1993), for example, placed the competence in a *cause-effect* relationship, with reference to a performance in a determined context. The authors identify five factors that they consider constituent skills:

- *Motivation*: like McClelland, Lyle and Signe Spencer share the importance of motivation that moves a person to implement behaviors aimed toward a goal.
- *Traits*: show the propensity to action and allow you to select between the behaviors that best suits the situation/ problem.
- *Self-image*: it is the set of values, attitudes and evaluations that an individual has with respect to the cultural itself. This is a spring action that pushes to try to solve any problem.
- *Knowledge*: the form of declarative and procedural knowledge.
- *Skills*: These are skills needed to perform a task.

Some of the factors constituting the skills are explicit in nature; it is about to specific skills that the person uses in action. We can use a metaphor, trying to think a person like an iceberg: the knowledge and skills are the section of an iceberg that is observable in a subject. The other factors, self-image, traits and motivation concern the part of the iceberg that you can't see. It is the most secret and personal part in a person. The training interventions take precedence over components emerged, that is knowledge and skills, because more simple; but often training interventions ignore self-image, traits and motivation. In education, the concept of competence and its formal employment dates back into the educational model of the *active schools* which belong to *experimental pedagogy*. Active teaching strategies use a kind of learning process that is characterized by the creations of artificial and changeable conditions. This educational intervention can stimulate the learner's active participation in the training process. The model of active school is based on learner, who is consider the main actor of learning activities, able to develop personal strategies for thinking and able to mobilize his knowledge to solve concrete problems. The competence construct, as varied and complex as proposed, responds to a specific understanding of the learning process. The theoretical structure that introduces and supports the competence construct is *constructivism* which refers to the learning process how to re-build what student already knows, rethinking network of subject prior knowledge. *Social-constructivism* believes that each knowledge activity involves a process of *active structuring* and *interpersonal negotiating*: it is also enhanced the social and cultural dimension where learning takes place. The context action has a dual function: the context influence the learning process but it is in turn influenced. Furthermore, the context is not only the social and cultural frame in which the individual builds his knowledge, but it is an active resource of knowledge production. The quality and the quantity of interpersonal relationships distinguish the kind of learning. That's why the educational process is fitted on dialogical and reflective basis, on the student interaction and collaboration, on the possibility to produce shared meanings (Fig. 2).

Fig. 2. Construction process of knowledge



Just as the figure shows, the constructivist approach believes that learning processes are the result of interactions that people produce in a given context, talking or discussing about the meaning of cultural objects. The value of the knowledge already held by each are *re-processed* and *re-negotiated* in times of interaction and the *new competence* (the integrated knowledge) is the added value to the individual, but also to the whole learning community. According to the constructivist perspective, communication plays a key role. This is why the training process is carried out primarily by and in the educational and social interaction and communication and is built as a meaningful experience for people.

The design of teaching and training is crucial to link the meanings at the real products. The construct of competence fit for the process of learning based on *social-constructivist* theories, because competence support to solve practical tasks. The nature of competence is essentially cross as it is composed by a set of patterns of action that can be spent in different contexts to solve particular situations. The subject, on the basis of the learning process, is called to know how to act according to a purpose. In the national and international debate, a lot of organizations and research institutes interested on this branch were concerned to establish what skills will serve to promote the inclusion on the social and work environment. Precisely, the competence construct is at the heart of the redefinition of training at the school level. In a document edited by the 1993 World Health Organization (WHO), called *Life Skills Education in School*, we try to provide an answer to the demands of the international community about the strategies of social integration. The WHO sets out ten fundamental skills, anticipating, in fact, the identification of *key competencies*:

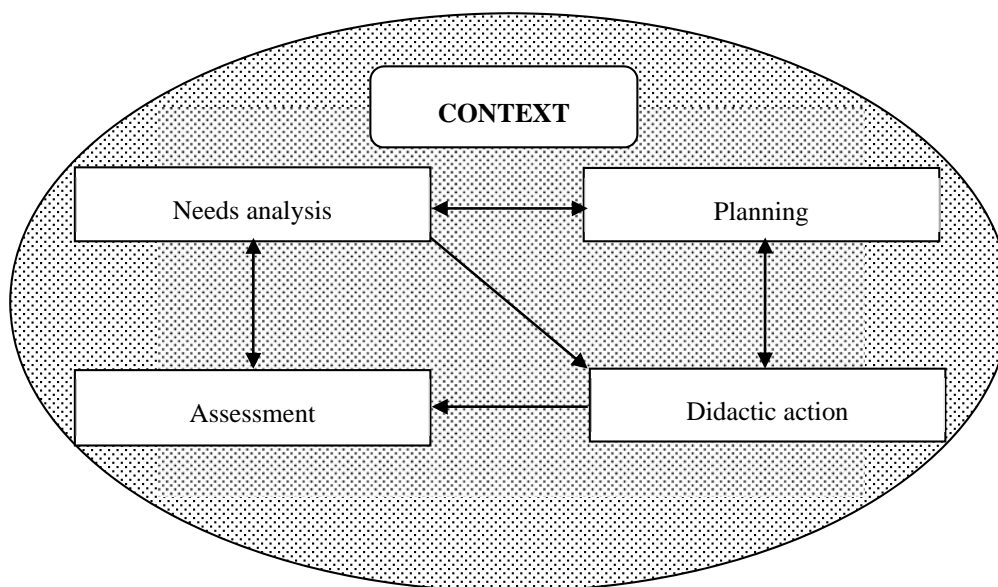
1. recognize their own emotions and those of others;
2. govern tensions;
3. analyze and evaluate situations;
4. make decisions;
5. solve problems;
6. flexibly cope with the various situations;
7. express themselves effectively;
8. understand others;
9. interact with others.

In Italy, the Institute for Development of Vocational Training (ISFOL) defines soft skills as the total assets of the personal resources that a person enforce to carry out a performance. The institute divides skills into three main areas: *basic skills* that are the minimum knowledge and the prerequisite of access to training; *soft skills*, that are not specifically related to a workplace or business, but testify the ability to adapt; and *technical and professional skills* to identify the knowledge needed at work (Isfol, 1997, p. 49-50). ISFOL definition focus on two

fundamental dimensions of expertise: the *cognitive* one, about knowledge and motivation, and the *experiential* one generated in the cultural and educational context of generation. In these writers opinion, the most representative definition of the complexity of the competence construct is the one proposed by Pellerey (2004): “Competence is the ability to cope with a task or set of tasks, being able to start and to orchestrate their own, cognitive, affective and volitional skills, and use external ones in a consistent and fruitful way” (p. 7).

To explain the definition of Pellerey is possible to identify some key elements that define competence in a determined way. It refers to a specific task, in which the individual is required to carry out competent behavior, aimed at the solution of the task: this is its operational dimension, linked to action. Then, the competence requires the mobilization of personal resources. This refers to the holistic nature of the term (Mulder, Weigel, Collins, 2006), by consequence the resources are not exclusively attributable to the cognitive dimension, but also to the motivations, social and emotional components and metacognitive ones. Competence use resources available in the context of action (external resources), particularly of shared meanings, tools and everything that physically and culturally characterize the environment. In this sense that the construct of competence itself absorbs different dynamics of the learning process (Fig. 3).

Fig. 3. The dimension of competent actions (Marzano, 2013, p. 209)



In Italy, the Autonomy Regulations of 1999 (Presidential Decree No. 275), for the first time sets out the results of education, in terms of skills (the term used up to that time was “standard learning”. The successive National Guidelines for the Custom Study Plan (Decree No. 56 of 19/02/04), and in particular its *Annex D* outlines the concept by defining what is called Educational, Cultural and Professional Profile of the student: what a learner should know at the end of the first cycle of education (6-14 years). To reconsider the learning process by introducing the construct of competence, involves a rethinking of the teaching action to allow the learner the possibility to use lessons assimilated. The student becomes the actor of the active and intentional learning, since the only way to be able to experience how to dispose of its competences. “As much as the learning acquired during the training processes are experienced, the more flexibility you can exercise your subject in adjusting or reorganizing the skills, needed to navigate within the cultural and professional mobility scenarios, in response to the demands placed on today young people and adults” (Melchiori, 2012, p. 12).

To encourage the *learning by competence* requires that action learning is reformulated in a particular way. The learning process should include activities that require direct and active involvement of the individual learner. The design of the training setting must include the need for this type of teaching, allowing its implementation. The competence practice for the learner involves three dimensions: self-activation of personal skills, coordination of used skills and the focus on the specific problem solving (Maccario, 2012). The course has to provide the basic tools to enhance the process of building skills and to implement the relevant actions.

The whole learning process must be assessed by means of consistent and appropriate tools to achieve the training goal set the learning for competence. “The acquisition of knowledge and skills in the actual conversion of the pure administration” (Bruner, 1973, p. 172), that is to possess skills, and know how, is restricted to the use of new teaching methods.

Planning in education means insert contextual, cultural and social conditions in which it will be operate. In fact the teaching action is addressed, to achieve specific goals for each student, in relation to reality-school and school reference. Design situations and learning environments means finding answers to the subjective and objective needs (Marzano, 2013) in order to promote learning and to stimulate individual curiosity and continuous personal growth. Quaglino (2005) suggests that educational processes should:

To take start from the specific needs and requests: a survey, therefore, more or less timely, accurate and thorough, but still sufficiently close to a reality of needs to be met, deficiencies to be addressed in relation to areas identified as realistically [...]. The next step will be the translation of what has been recognized as a need in specific directions as to the characteristics to be taken by the setting [...]. So it comes to specify learning objectives, to detail the contents of this knowledge, to choose the most appropriate for its transmission (p.14).

The importance of the competence construct in schools has an impact on the way to evaluate the goal set. The evaluation practices are inevitably mirror the didactic model, the base of which is a specific idea of learning and teaching. As well as, Pellerey (2004) supports that learning, teaching and assessment are closely intertwined: in recent past years teaching approach have had a profound cultural transformation that takes the concept of competence as a cornerstone. Indeed, the change is parked on assessment practices. It change the *significance* of the performance requested in accordance whit the learning project, it change the test *authenticity* reflecting the real world demands, it change the assessment *processuality*, that want capture the indissoluble links between the performance and the achievements, it change the student *responsibility* about the evaluation and the solution of the proposed task, it change the *promotion* of assessment activity in relation to the training process and expected results, it change the *dynamism* of the assessment because it is interpreted like a process aimed to promote the student skills, it change the *entirety* of evolution moment, seeing as all process dimension are studied (cognitive, social, affective and conative dimensions) and, at last, it change the *multidimensionality* of assessment because the reading occurrence is done by many perspectives (Galliani, 2009).

The assessment is divided into three parts: the choice of educational goals, the detection of performance and the judgment of results. Competence construct introduction speaks about authentic assessment. The authentic assessment is the evaluation that occurs in the context of a learning environment and reflects the real learning experiences and worthwhile that can be documented through observation, recording of facts, newspapers, journals, entries work, conferences, portfolios, writing, discussions, experiments, presentations, demonstrations, projects, and other methods. The real reviews can include individual or group tasks. The emphasis is on reflection, understanding and growth rather than answers based on recall of isolated facts. The purpose of authentic assessment is to engage students in tasks that require to apply the knowledge in real-world experiences. The authentic assessment discourages the evidence “paper-and-pen that are disconnected from the teaching and learning that takes place at the time. In authentic assessment, there is a personal intent, a reason to engage, and a true listening that are beyond the capacity/skills of the teacher (Crafton, 1991). To judge knowledge achieve it forces us to adopt a plural perspective of observation. Marzano (2014) believes that is possible basing on a Pellerey proposal (2004), to observe the development of learner’s skills speaking about three dimensions: *objective*, *subjective*, *intersubjective*. The subjective dimension preserves the need to detect observable and measurable evidence. To meet this kind of testing, for example, *tasks of fact*, *cases study* or the manufacturer production. Then, the subjective dimension recalls the personal meanings that the student gives in their learning experience. This dimension implies the learner’s self-rating process, with whom he establishes his involvement and his motivation to solve the proposed task. Part of the intersubjective dimension are the social matching and judgment of others over the course of the performance required. In the latter case it is possible to talk about an *hetero-assessment*, that involve all the actors committed in the process of co-construction of meanings. Each of the evaluation dimensions needs appropriate instruments according to their specificity, to compose, finally, an articulated and comprehensive framework’s assessment. Wiggins supports that in the process of *authentic assessment* is not necessary to judge what the student knows, but what he can do with the things he knows (Wiggins, 1993, p.24). He believes that the *authentic assessment* possesses specific characteristics:

- It is realistic;
- It requires judgment and innovation;
- It requires to student to build the branch of Knowledge;
- Replay or simulate the context in which the student will be immersed when he became adult (we talk about professional environment, social and affective sphere);
- Judge student’s ability to solve problem mobilizing his internal knowledge and those made available by the environment;
- Student can have instant *feed-back* that can be used for improve the performance.

How produce an authentic assessment for competence? It is important to note that the judgment can be inferred from competence manifestations, and not from a single performance; Bertagna (2004), in fact, believes that in order to assess the competence you need to consider a number of services, such that they assume the role of *information base* on which to establish the level achieved by the learner. In the construction of the tests of authentic assessment it is necessary to adopt a multi-dimensional approach in order to obtain evidence on the competence shown by the students. The tests of authentic assessment should enable the student to navigate in a complex and interdisciplinary situation, and should lead him to find the original solution strategies, starting from a experiential logic. Kline (1996) identifies on structured test and on semi-structured test “the kinds of questions useful to build test, that will measure the individual advancement in learning the competence” (p. 229).

The main feature of authentic assessment is to immerse the student in a critical condition, in a brief but effective way, to support the start of the test, when the learner has to break into different parts the problem. To help the student in this phase can be used: newspaper articles, essays, photographs or drawings. The documents are necessary to build the frame. The task involves the solution of questions about the problem: these are constructed in a commensurate way in respect with the student background. The test contains two elements: the *originality* and *complexity*. Originality and complexity are subjective in nature, since they depend on the age and on the student prior knowledge. This means that the same task, administered to students over the age would be subjectively less complex. Then the test should be measured to students who are asked to solve it. Test structure have to propose a simulation of the actual circumstances in which to use the acquired skills to extricate himself from the situation-problem.

An interesting example of authentic assessment used for competence evaluation is the PISA 2009 Project (International Programme for Student Assessment), sponsored by the Organization for Economic Cooperation and Development (OCSE), make to assess the competence of fifteen-schooled. The study is based on the assessment of competence in the areas of reading comprehension, mathematics and science. As provided in authentic tasks, the focus is not taken on curricular contents, but the attention is on the ability to use the skills acquired at school to solve problems that are encountered in everyday life, and also is important appreciate the students motivation in the spontaneous and continuous learning. Among the domains of interest of the OCSE-PISA 2009 tests is considered the *problem solving*, with which it identifies the ability of an individual to implement cognitive processes by finalizing the solution to a complex problem.

CONCLUSION

Finally, the introduction of the competence construct in learning has deeply changed the way of understanding the process of formation. The action of education have to be directed to the new demands of contemporary society, where the knowledge should not only be acquired but also put into practice. The competence concept implies, on the one side, the active practice of knowledge to solve real problems, according to the demands, constraints and resources of the environment and, on the other side, competence requires the ability to reshape the knowledge in dealing with new situations and to respond to the challenges that they present themselves. Then teaching means integrate the learning in function of practical action. Learning by competence complies the needs of the contemporary paradigm and it is important to promote the application of this kind of learning more and more.

REFERENCES

- Bertagna, G. (2004). *Valutare tutti, valutare ciascuno*. Brescia: La Scuola.
- Bruner, J. S. (1973). *Il significato dell'educazione*. Roma: Armando Editore.
- Castoldi, M. (2009). *Valutare le competenze. Percorsi e strumenti*. Roma: Carocci Editore.
- Crafton, L.K. (1991). *Whole language: Getting Started... Moving Forward*. Katonah, NY: Richard C. Owen Publishers.
- Galliani, L. (2009). *Web Ontology della valutazione educativa. Dalle comunità accademiche alle comunità di pratica*. Lecce: Pensa Multimedia Editore.
- Gillet, P. (1998). Pour une écologie du concept de compétence. *Education Permanente*, 135, 2, 23-31.
- Le Boterf, G. (1990). *De la compétence: Essai sur un attracteur étrange*. Paris: Les Éditions de l'Organisation.

- Le Boterf, G., Barzucchetti, S., & Vincent, F. (1992). *Comment manager la qualité de la formation*. Paris: Les Éditions de l'Organisation.
- Maccario, D. (2006). *A scuola di competenze. Verso un nuovo modello didattico*. Torino: SEI.
- Marzano, A. (2013). *L'azione d'insegnamento per lo sviluppo delle competenze*. Lecce: Pensa Editore.
- Mason, L. (1996). *Valutare a scuola. Prodotti processi e contesti dell'apprendimento*. Padova: Cleup.
- McClelland, D. (1973). Testing for competence rather than for intelligence. *American Psychologist*, 28, 1, 1-40.
- Melchiori, R. (2012). *Le competenze e i risultati di apprendimento*. Roma: Edizioni Nuova Cultura.
- Mulder, M., Weigel T., & K. Collins (2006). The concept of competence concept in the development of vocational education and training in selected EU member states. A critical analysis. *Journal of Vocational Education and Training*, 59, 1, 65-85.
- Notti, A. M. (2002). Competenza e standard. In Coggi, C., & Notti, A.M. (EDS). *Docimologia*. Lecce: Pensa Multimedia.
- Notti, A.M. (a cura di). (2013). *La costruzione di strumenti per la valutazione delle competenze*. Lecce: Pensa Editore.
- Pellerey, M. (2004). *Le competenze individuali e il Portfolio*. Firenze: La Nuova Italia.
- Quaglino, G.P. (1990). Competenza, in *Appunti sul comportamento organizzativo*. Torino: Tirrenia.
- Quaglino, G.P. (2005). *Il processo di formazione. Scritti di formazione 2 (1981-2005)*. Milano: Franco Angeli.
- Resnick, L. B. (1995). Imparare dentro e fuori la scuola. In C. Pontecorvo, A. M. Ajello, C. Zuccheromaglio (Eds). *I contesti sociali dell'apprendimento* (61-81). Milano: LED.
- Spencer, L., M., Jr., & Spencer, S. M. (1993). *Competence at work models for superior performance*. New York: Wiley.
- Wiggins, G. P. (1991). A true test: Towards more Authentic and Equitable Assessment. *Phi Delta Kappa*, 70, 9, 703-713.