SECTION SPECIFIC SCIENTIFIC ISSUES

TEACHING AND ASSESSING TRANSFERABLE/TRANSVERSAL COMPETENCES. THE CASE OF SOCCES

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As OECD (2009) states: "Globalisation and modernisation are creating an increasingly diverse and interconnected world. To make sense of and function well in this world, individuals need, for example, to master changing technologies and to make sense of large amounts of available information. They also face collective challenges as societies – such as balancing economic growth with environmental sustainability, and prosperity with social equity. In these contexts, the competences that individuals need to meet their goals have become more complex, requiring more than the mastery of certain narrowly defined skills."

The critical importance of transferable competences in future employment is widely recognized. However, in most countries the educational practices are still under development and transversal competences are taught using different methods. Related subjects may have cross-curricular status, they may be integrated into existing curriculum subjects or they may be introduced as separately.

The transversal competences, as well as other generic skills like creativity or problem solving, relate to more than one subject area and are more difficult to assess with traditional instruments. Therefore it is worth exploring what forms of assessment instruments are available for teachers to assess student progress in these fields. In most countries, a variety of subjects incorporate learning objectives or learning outcomes related to transversal competences.

The aim of the European project SOCCES ("SOCial Competences, Entrepreneurship and Sense of Initiative – Development and Assessment Framework) is to develop and pilot a framework for the methodical assessment for two competences that are very important for working life - namely the Sense of Initiative and Entrepreneurship, and Social competences. The developed framework will be translated to a concrete assessment module that can be used in different educational environments. The module will include a collaborative, virtually enabled assignment and will be accompanied with virtually enabled teacher instructions.

In this respect the paper has the objective, based on multiple project outcomes as well as on the evolution of existing educational and assessment practices, to outline and provide food for thought for defining and analysing innovative ways of teaching and assessing transferable/transversal competences in the context of higher education.

JEL: I21, I28, J24

INTRODUCTION

Education authorities in all countries issue guidelines on what should be taught or learnt in schools. Usually these guidelines are included as part of curriculum documents or syllabuses. In recent years, reforms in many countries have reshaped curricula on the basis of new concepts such as 'key competences' and 'learning outcomes' and some have introduced achievement scales. In many countries, a subject-based organization with a focus on subject content has given way to a more complex curricular architecture built, in part, on practical skills and cross-curricular approaches. In addition, new curriculum areas have been either introduced or given a higher profile in many European curricula. This is notably the case with entrepreneurship education, ICT and citizenship education.

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Significant focus has been placed in the educational policy debate on how to improve the adaptation of the European education and training systems to the needs of our economy and modern society. Success in the 21st century requires knowing how to learn. Students today will likely have several careers in their lifetime. They must develop strong critical thinking and interpersonal communication skills in order to be successful in an increasingly fluid, interconnected, and complex world.

The importance of responding to the new social, economic and technological realities and stimulation of open and flexible learning are called for in European and national policy statements. In this context also the assessment of the skills has gained increasing attention.

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Partners within the project are six higher educational institutions (Coventry University, UK; University of Bologna, Italy; Veliko Tarnovo University, Bulgaria; University of Montpelier, France; Laurea University of Applied Sciences, Finland and NHTV University of Applied Sciences, the Netherlands) together with a European consultant company on quality assurance (Savares, Ltd.)

The objective of this paper is to present apart from the existing theories in teaching/educating for and assessing transferable/transversal competences, also the analysis and the drawn conclusions based on several surveys conducted within the framework of the SOCCES partnership consortium.

TRANSFERABLE/TRANSVERSAL COMPETENCES

Generally speaking, concepts are socially constructed notions that facilitate the understanding of reality while also constructing it. Notions such as "key competences" and "core skills" have become very fashionable in social policy discourse. However, these terms often have very vague meanings. Therefore, their clarification was considered a necessary prerequisite for defining and selecting key competences. However, based on recent commissioned reports (OECD; European Commission; DeSeCo, etc.), it is recognized that in social sciences there is no unitary use of the concept of competence, no broadly accepted definition or unifying theory. In fact, the meaning of such terms varies largely depending on the scientific perspective, social context and ideological viewpoints involved, and on the underlying objectives associated with their use, both at scientific and political levels. As such, DeSeCo (2012) adopts a pragmatic conceptual approach, limiting the use of the concept with criteria which are more or less explicit, plausible, and scientifically acceptable.

Since they refer to broad, multi-functional areas of human ability, key competences are difficult to define and organize in the same way as subject knowledge. A number of international bodies such as the OECD, the World Bank, UNESCO and the European Commission have undertaken research leading to the recognition of the importance of key competences and created frameworks intended as clarification and guidance for policy makers and educational professionals. Several non-governmental organizations have also developed frameworks for key competences, for example the Assessment and Teaching of 21st Century Skills (AT21CS) consortium.

The concept of key competences originated with the adoption of the Lisbon Strategy in 2000 and it resulted in the European Reference Framework. Key competences in the EU framework are those that "all individuals need for personal fulfillment and development, active citizenship, social inclusion and employment". The development of key competences should include both subject-based and transversal competences that will motivate and equip students for further learning.

Based on the European framework for eight key competences, defined in 2006 (ANC 2006/962/EC), the transferable (transversal) competences are: communication in the mother tongue; communication in foreign languages; mathematical competence and basic competences in science and technology; digital competence; social and civic competences; sense of initiative and entrepreneurship; learning to learn; cultural awareness and expression.

These competences are fundamental in a knowledge-based society to meet the needs of the labour market, social cohesion and active citizenship. The idea is to ensure greater flexibility and adaptability, satisfaction and motivation.

In addition to social and economic motivations, there are some prominent theoretical traditions which highlight the need for key competences, and have influenced ideas about how they should be taught, for example:

- Dewey's social perspective: The American philosopher, psychologist and educational reformer John Dewey (1859-1952) was the first to argue that learning occurs within a social system rather than being confined to mental processes. This focuses attention on the context in which knowledge is acquired, which has led to various ideas about how learning environments should be structured in order for learners to make connections between knowledge and the social world.
- Constructivist learning theories: Educational research has repeatedly addressed the issue of transfer – what is the most effective way to encourage learners to apply their knowledge to novel and real life situations? Constructivist learning theories suggest that effective transfer is more likely if learning is an active process. Rather than learning being a process of knowledge transfer from expert to learner, learners should construct knowledge themselves by interacting with the environment (Kriz, 2010). Researchers argue that this process ideally occurs in an environment that reflects the real world, wherein learners work actively on tasks.
- Professional origins: Reference to competences started to be made in the professional world in France in the 1970s to refer to what employees need beyond qualifications to act effectively in a range of work situations (Legendre, 2008). In the 1980s, competence-based approaches started to be developed in some countries for vocational education and training.

The European Commission also identifies the following 'transversal skills' that are relevant across the eight key competences:

- Critical thinking
- Creativity
- Initiative
- Problem solving
- Risk assessment
- Decision taking
- Communication
- Constructive management of feelings

Transferable competences often also referred to as transversal (OECD, 2012) are defined as competences that can be transferred from one job to another. They are sometimes also called generic, soft or employment competences. One can learn these skills within the educational or social context and then transfer them to a career. These competences are used and developed in all areas of one person's life.

There are three main ways in which the transversal key competences may be integrated into the curriculum in higher education: they may have cross-curricular status, they may be integrated into existing curriculum subjects or they may be introduced as separate curriculum subjects.

Where the transversal key competence is given a cross-curricular status, related learning objectives or outcomes are incorporated into the parts of the curriculum that are not subject-bound. They are often included in sections dedicated to cross-curricular objectives, themes or competences. Alternatively, they may be included in introductory sections devoted to general objectives or, in some cases, a distinct cross-curricular learning area is designated which all teachers have a duty to implement. Indeed, a cross-curricular status implies that all the different learning areas and subjects constituting the curriculum should contribute to the acquisition of the related competences. Regarding teaching of digital competences, in particular, it requires teachers across the different curriculum subjects to use ICT as a tool for demonstration purposes and students to use it to perform specific tasks.

Transversal competences may also be integrated into existing curriculum subjects. Where this occurs, learning objectives or outcomes related to digital, civic or entrepreneurship competences feature within the specific curricula for these subjects. The choice of subject is relatively consistent across countries, although some differences are apparent. For instance, the subjects

which incorporate citizenship education are mostly the social sciences, languages, and ethics/religious education; but sciences and mathematics, as well as artistic education are also mentioned by some countries. ICT is in most cases taught as part of a technology subject.

Finally, a specific subject can be wholly dedicated to one of the transversal competences, which is expressed here by the 'separate subject' label.

Implications in education

The transversal competence development of every young person is one of the long term objectives of the updated strategic framework for European cooperation. Most of the EU Member States are formulating and at least beginning to implement policies that move their educational systems from being predominantly input led and subject-oriented towards curricula which include competences, cross-curricular activities, active and individual learning, as well as a focus on learning outcomes.

Part of the principle behind transferable competences is to break from 20th century structures which separate the transmission of knowledge into disciplines, thought by some to be an invention of teaching that does not reflect the worlds of culture, science or economics (Gauthier, 2006). While none of the EU member states have adopted a 'subject-free' approach, it is generally recognised that the majority of transferable competences are not tied to any particular subject and are needed alongside all areas of study. Hence developing a cross-curricular framework is the approach taken by most EU member states that have explicitly addressed key and in particular transferable competences. This is also because key competences in general are not learned discretely but more than one may be developed at the same time.

This approach is challenging to implement, given that most European states tend to train teachers in single subjects, and school timetables tend to be based around single subject lessons. For example, this raises concerns about where and how cross-curricular competences will fit into the educational set-up of the day. Another consideration is the level of education at which key competences apply.

The critical importance of transversal competences in future employment is widely recognized. However, in most countries the educational practices are still under development and transversal competences are taught using different methods. Related subjects may have cross-curricular status, they may be integrated into existing curriculum subjects or they may be introduced as separately.

Transferable (transversal) competences are generally taught as a part of other subjects and national curricula in most countries cover IT, entrepreneurship and citizenship. But the picture is uneven. Nine countries (Germany, the Netherlands, Italy, Greece, Romania, Ireland, Denmark, Belgium Flemish community and Croatia) do not explicitly cover entrepreneurship education at primary level while digital competences are addressed in primary school everywhere except Croatia.

A commonly recommended approach to teaching transferable competences is to provide interactive learning environments that facilitate active learning. These learning environments, which promote collaborative and multidisciplinary learning, are increasingly technology enhanced. They allow several transversal competences to be addressed simultaneously. As suggested by constructivist learning theories, learners can develop key competences, and therefore transfer their knowledge, if they learn through authentic activity, rather than solely through instruction. Learning environments need to reflect real world contexts. Such simulation has three main purposes: it can motivate learners more than traditional approaches (Lepper and Henderlong, 2000; Garris et al., 2002); learners are more likely to remember concepts they discover on their own (de Jong and van Joolingen, 1998); and it provides a meaningful environment for problem-based learning (McFarlane et al., 2002). Through games or other activities, learners can be presented with real life problems, which they can attempt to solve through debate, experimentation, exploration and creativity. Problems should be complex and with multiple solutions. The end product – the learners' solution – can take a variety of forms. While interactive learning environments encourage learners to be active and autonomous, they also require collaboration between learners, developing social and communicative competences. A learning environment does not have to be classroom based. Virtual worlds are also types of interactive learning environments. Placement, intern, study trip programmes are potential sites for key/transferable competence development. These often have an applied focus and 'should be a site of experimentation and innovation, a place where educators catch up with the changing

culture and teach new subjects that expand children's understanding of the world' (Jenkins et al., 2006). They may also enhance student engagement and promote collaborative learning, even at a young age (Denis and Hubert, 2001). In addition, using tools like mobile technology can connect learners' lives inside and outside school (Sharples et al., 2005 and 2007). Learners' responses to real world problems may be conceived of in terms of a longer term, cumulative activity that may take place individually or in groups, and usually requires a final practical outcome. This project-based learning is typically cross-curricular rather than subject-specific; projects may address several subjects and also several key competences and transversal competences simultaneously.

However, the provision of interactive learning environments alone is not sufficient; activities need to be supported by scaffolding and by explicit instruction where relevant. In particular, learners need support to develop their ability to learn independently. Educational institutions need to consider learners' social and emotional wellbeing and allow learning to be more self-directed. Teachers need to be supported to develop these new methods, both through the re-orientation of initial teacher training frameworks, and through continuous learning and peer-to-peer support. Knowledge of ICT and familiarity with assessment methods are particular areas for development.

The implementation of transversal (transferable) competences requires attention to the social context of learning, and consideration of all the influences upon a learner's ability to both acquire and transfer what they learn in school or at university.

The interaction of teachers in a peer networking environment is also of great importance -n learning environments and teaching methods place a new set of demands on teachers. Many of the activities, in spite of being enabled by technology, are highly teacher-dependent, particularly those that promote interdisciplinary and transversal competences. Teachers can expand their knowledge of both teaching and assessment by sharing information and resources among teacher learning communities. These offer a non-threatening forum in which to share key examples, and develop their teaching and assessment practices.

HOW TO "THINK"FOR TRANSFERRING TRANSVERSAL COMPETENCES

Convergent and divergent thinking

When designing an educational or training process, aimed to transferring transversal (transferable) competences, it is important to start taking into account what kind of "thinking" we will propose to learners during the activities planned. In this article, we propose to consider a brief reflection on convergent or divergent thinking.

Convergent and divergent thinking are two way to "think", two different of cognitive approaches to problems and questions (Duck 1981).

Divergent thinkers are better at finding additional ideas, whereas convergent thinkers have more difficulties to finding additional ideas (Kneller, 1971).

Don't wishing to open a debate on what kind of thinking fits better with what kind of competences, the orientation suggested is simply based on the assumption that transversal competences need a divergent thinking, because these (such as expressing ideas, facilitating group discussion, negotiating, solving problems, setting goals, defining needs, analyzing, promoting changes, etc.) require an open and flexible attitude.

Convergent thinking is the type of thinking used to solve a problem when there is a simple, correct answer to a question. It is characteristic for example of the resolution of problems of mathematical physics (individual subject), and assumes that there is a single solution to the problems and issues (this attitude is not indicated for competences such as "the problem-solving").

In contrast, the divergent thinking stimulates multiple answers to complex problems (as in the case of problem-solving).

It is the type of thinking to use when solving an abstract, or a complex or a new problem that has many possible answers, solutions, or outcomes.

Learning perspectives: Reproduction learning perspective, Construction learning perspective, Creativity learning perspective

Once assumed that divergent thinking is a more effective cognitive approach to complex problems and questions, and it better fits with transversal competences, the education/training

process needs a further theoretical reflection on what learning perspectives adopted during the transfer of competences.

It means that, if we encourage for a divergent thinking, this must have a coherent relation with the learning perspective used. Summarizing the main learning perspectives, these consist of:

- Reproduction learning perspective: it consists in providing to each possession of the necessary information at the level of organization of content, vocabulary, knowledge of the investigative tools of the various sectors that make up the knowledge.
- Construction learning perspective: it consists in the formalization and troubleshooting, through observation, hypothesis, experimentation, verification. It is addressed to the personal construction of knowledge, using instruments of direct investigation (attitudes, methods, techniques) aimed at generalization, and the transferability of knowledge products.
- Creativity learning perspective: is the construction of original comprehension / revision of knowledge. Ensuring discovery: new cultural objects or different, new approaches / different (original) as those objects, enhancement of its subjectivity.

The third perspective, based on the constructivism theory (in which, the learning environments emphasize knowledge construction, instead of knowledge reproduction), could encourage a knowledge arising through a process of active construction (Mascolol & Fischer, 2005).
It means to use during the lessons, for instance: learning games, learning by doing, cooperative and participatory approaches (work in groups), etc. In order to promote an effective construction of the learning, that can lead to a divergent thinking, useful to the acquisition and use of transversal competences.

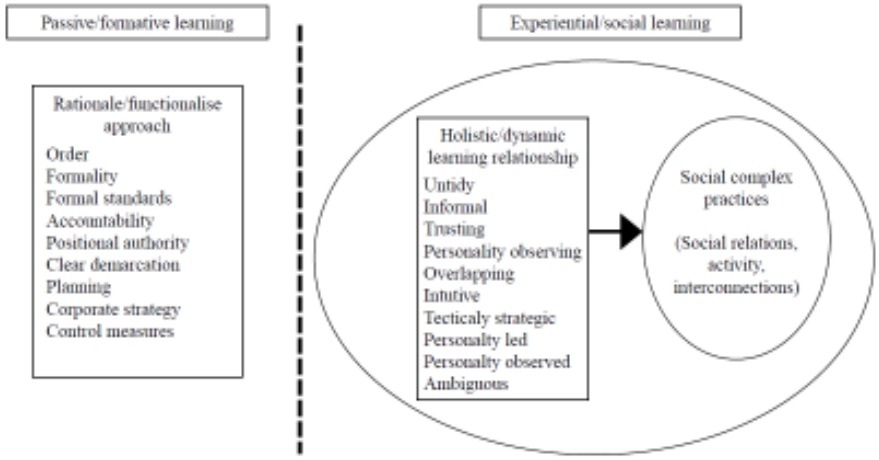
Educational and pedagogical practices

While skills are considered as human capital or potential, the competence approach focuses on what the people can do rather than what they know. Competences are described as “behavioural manifestations of talent” (Boyatzis, 2008) or observable aspects of performance in specific circumstances (Spencer & Spencer, 1993). Competences are not personal constructs or traits but rather dispositions that can be attributed to individuals, teams and organisations. They are latent attributes identified and defined in a community of practice (Spencer & Spencer, 1993). The goal should be to teach learners to develop using their skills and knowledge in successful ways, in creating competences (McKinney & Denton, 2005).

Education should be developed to better correspond to the needs of real-life situations and be the focal point of teaching and learning, thus enabling students to develop appropriate competences for working life. Of key importance in enhancing learners’ employability, entrepreneurial potential and familiarity with the working world are partnerships between higher education institutions (HEI) and employers. As stated by the Council of the European Union (9876/09), “competitiveness and growth of Europe's economy could be improved by putting the knowledge triangle to work, notably by developing partnerships between employers and education and research institutions which are aimed at fostering innovation and ensuring its transfer into practice.” In working life control, compliance, and compartmentalisation (the 3 C’s) are being outplaced by ideas, information, and interaction (the 3 I’s) (Ketz de Vries, 2006).

Wilson-Medhusrt (2008) claims that “learning experience is more likely to have significant positive gains for the learner if they are active rather than passive recipients within it” and sites McGowan & Knapper (2002): “Learning in a passive system has a much greater tendency to be both superficial and quickly forgotten. Active involvement in learning helps the student to develop the skills of selflearning while at the same time contributing to a deeper, longer lasting knowledge of the theoretical material.[and] …it is almost the only effective way to develop professional skills and to realise the integration of material from different sources.”(McGowan & Knapper, 2002, p.633). This same thing was presented by Higgins & Elliot (2011)

Figure 1: Functional and social learning relationships affecting entrepreneurial education, (Higgins & Elliot, 2011).



Authentic contexts and related communication with peers and professionals promote learning (McLoughlin & Luca, 2002). Deeper and more regular collaboration should be developed between education and business bringing the learners closer to the reality of working life. Educational programmes at all levels should consider - and whenever possible, reflect - authentic real life applications (Guilland, 2013). Particularly on the post- secondary level, a key function of teaching and learning today is preparation of students for careers and the rapidly evolving work place of the 21st century. Even though often ignored, also business and entrepreneurship are fields where practice is required for learning just and a shift should be made from passive, formative learning towards experiential learning (see Figure 1: Higgins & Elliot, 2011; Pfeffer & Fong, 2002).

Solutions to these bring various forms of so called collaborative learning such as project-based and problem-based learning approaches in which learners work together in a small group to achieve a common objective (Soetanto, Childs, Poh, Austin & Hao, 2012).

MODELS, PARADIGMS AND DIRECTIONS FOR ASSESSMENT IN EDUCATION

Assessment in education is defined as a process of gathering evidence, making judgments and drawing inferences about student's achievements and performances (Curtis, 2010). Pellegrino, Chudowsky and Glaser (2001, p. 42) described assessment as: *a tool designed to observe students' behaviour and produce data that can be used to draw reasonable inferences about what students know.* Ketchagias (2011) emphasizes on the interest of this description because it highlights three key elements that are common to any assessments practice defined as "the assessment triangle": observation, data collection and interpretation and learners' cognition. Moreover, the combination of these three dimensions leads to the question of the purpose of assessment in education. The next few paragraphs will be dedicated to a general overview on the most influent learning models and their impact on assessment approaches, strategies and tools. The relationship between teaching, learning and assessment has never been so close. A few key concepts concerning new perspectives in assessment will be briefly analysed in order to provide a framework on assessment and its potential in educational processes.

The classical theory/measurement theory

The "so called" classical test theory was born to enhance the scientific impact of assessment and evaluation. With an epistemological view this model for assessment is inspired by the paradigms of positivism or empirical paradigm. According to this approach, assessment can be reliable if only limited to measurable facts, performances, and events. Qualitative phenomena need to be transformed in quantitative variables by defining measurable indicators. This implies an indirect way to acquire knowledge as the only possible way to assess. Moreover, the phenomena to be evaluated can only be described or explained in its variability and needs to be represented as a quantitative variable.

From the point of view of psychology and learning models, the classical theory on evaluation also rely on behaviourism, associationism and traits theory or of the fundamental abilities. (Mislevy, 1996).

The classical theory on assessment is characterised by:

a) an overall approach focused on positivism or empiricism;
b) the use of statistic models and methodological procedures;
c) the influence of psychological behaviourism.

In this approach, tests are preferred rather than others forms of assessment. Test's scores must be as diversified as possible, or else the test is not discriminant.

Lindquist (1951) defined an educational achievement test as "a device or procedure for assigning numerals (measures) to the individual in a given group, indicative to a various degree to which an educational objective or set of objectives has been realised by those individuals" (p. 142). The aim of this approach is typically to measure students' abilities in areas such as reading, writing, mathematics, science, etc. Generally, the focus relies on whether assessments are reliable and valid. The assessed phenomena generally lie beyond the behaviour or performance that is observed and measured. According to Bloom (1971), we cannot recognise mental actions such as motivation or comprehension unless we define behaviour or performances that lie beyond or manifest these mental achievements.

From the perspective of Psychology the classical theory and the measurement theory on assessment are based upon Behaviourism, the philosophy of learning that avoid focusing on mental activities but stresses on behaviours that are objectively observable. Behaviour theorists define learning as the acquisition of new behaviour through classic conditioning, behavioural or operant conditioning (Dellarosa 1988).

In the perspective of behaviourism, *knowledge* is an organised accumulation of associations and skills, and *learning* is the process that allows acquiring associations and skills (Skinner, 1958, 1968). In this view learning can be demonstrated by tests measuring behavioural skills in discrete tasks, while the process of learning can be showed by monitoring changes in behaviour, according to regular task practice and reinforcement.

The cognitive theory on learning

The classical test theory has been often criticised because it lacks from a theory on cognition: a model that allow to understand what is hidden beyond the test (Anastasi 1967, McNemar 1964). While measuring learning and intelligence through tests we cannot understand processes or operations that brought an individual to provide a response. Despite accurate statistic correlations or factor analysis, the classical approach on assessment doesn't allow to progress in the understanding of cognitive processes lying beyond learning processes. Starting from these premises the cognitive approach to assessment proposes, as alternative, to move from statistically based to theory based tests (Lohman 1997). From the perspective of Cognitive Psychology on learning mind is conceived as a system for information processing. The individual is not passive but active when acquiring knowledge, he/she doesn't only react to stimuli but selects and processes it. Cognition is intentional when using abilities or mental operations such as tools in processing information. (Neisser 1976). In its first phase Cognitive Psychology focused on the HIP (Human Information Processing) model, where mental operations were considered as routines or procedures coordinated by a controlling superior function. In the following development of Cognitivism the controlling function has been related to intentional thought, mental representation and reflexivity. The focus on reflexivity or metacognition, in particular, allowed highlighting the significant competences, which are distinct from the operational ones. For instance, the capacity to memorise depends on the memorisation strategies that are adopted. According to this perspective the most significant competence rely on the consciousness that a person has on his/her own mental strategies and the consequent capacity to control this. (Neisser 1976). Knowledge deals with learning strategies while knowledge on knowledge itself is the highest self-reflexive consciousness concerning what we know, what we need to learn and what we have to do, in order to acquire the requested knowledge. This consciousness on mind strategies and potential is due to metacognitive experiences and self-questioning. (Sternberg, Smith 1988, Carrol 1981).

Sternberg defined three components in mind's activity: the metacomponents, the performance components, and the knowledge-acquisition components (Sternberg, 1985). The

metacomponents are coordinating operational processes that are necessary for complex actions such as problem solving and decision-making. These components are necessary to orchestrate mental energies in order to reach complex goals, according to a coherent overall view. (Sternberg, 1985).

The second Sternberg's set of components is called the performance components and it is formed by all the basic processes that, all together, can carry out the most complex metacompontents performances. These elementary processes allow our mind to do fundamental tasks such as: recognising and perceiving problems, fixing it in our long-term memory, recognising relations between objects and applying to other contexts (Sternberg, 1997).

The last group of components is represented by the knowledge-acquisition components that are used to obtain new information. These components allow to combine pieces of information and to select the significant from the irrelevant ones. (Sternberg, 1997).

These three components, when applied to different contexts and tasks, create three functions of intelligence that Sternberg (1985, 1997, 2001) classify as:

- the analytical intelligence (that is considered as componential)
- the creative intelligence (that is mostly experiential)
- the practical intelligence (that is contextual)

In this perspective when assessing learning goals one must deal with complex abilities and competences such as selection, synthesis, analysis, planning, evaluation, decision making, problem solving, etc.

Constructivism and social constructivism

In the perspective of constructivism learning is seen as an active and continuous process where knowledge is constructed and reconstructed, influenced by prior knowledge and experience. Knowledge is build upon individual constructions, which don't necessary match to the reality itself or to other people' constructions (Handleya, Sturdya A., Finchamb, Clark 2004).
Constructivism assumes that the mind of a learner works as the mind of a 'little scientist' (Woolfolk, 1998). Learning is a process for searching meaning and can be promoted starting from the significant issues of student's experience. Learning processes based on the principles of constructivism work on mental models that students use to represent a situation or understand a topic, in order to improve these models. At the same time teachers, in a constructivist perspective, helps students becoming aware of their convictions and implicit theories by giving them tools to self-question, reflect and move further narrowed views. The purpose of learning for a student is to become able to build up his/her own meaning. This doesn't mean to learn the right answer, that would mean acquiring one's other meaning, but to find a personal way to make knowledge a significant part of life. Transmissive learning is refused: students cannot only register information, they must become creators of their personal knowledge structures. (Herman 1997).

In the scale of the Constructivist Learning Environment Survey (CLES) Taylor, Fraser and Fisher (1999) indicate a group of indicators defining constructivism in learning.

- *Personal Relevance: the connectedness of school to students' out-of-school experiences, and with making use of students' everyday experiences as a meaningful context for the development of students' scientific and mathematical knowledge.*
- *Uncertainty: the extent to which opportunities are provided for students to experience scientific knowledge as arising from theory-dependent inquiry, involving human experience and values and as evolving, non-foundational, and culturally and socially determined.*
- *Critical Voice: the extent to which a social climate has been established in which students feel that it is legitimate and beneficial to question the teacher's pedagogical plans and methods, and to express concerns about any impediments to their learning.*
- *Shared Control: that concerns with students being invited to share with the teacher control of the learning environment, including the articulation of learning goals, the design and management of learning activities and the determination and application of assessment criteria.*
- *Student Negotiation: the extent to which opportunities exist for students to explain and justify to other students their newly developing ideas, to listen attentively and reflect on*

the viability of other students' ideas and, subsequently, to reflect self-critically on the viability of their own ideas. (Taylor, Fraser and Fisher, 1999 p. 296)

In this perspective assessment must focus on learners' processes of experiential reflection, which can be represented by mind maps, self-questioning, self-explanations and search for meaning (Fenwick, 2000; Chia, 2003).

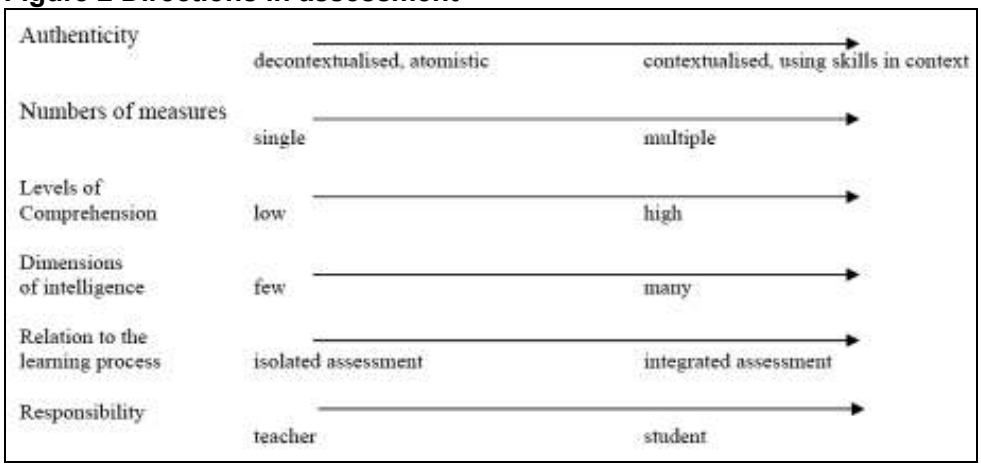
Assessment directions and purposes: new perspectives

This overall quick view on the most influencing learning models and their related approaches to evaluation con give an idea of the dimensions undertaken by assessment in the educational debate. Far from playing the role of certification or final stage of a teaching a learning program, evaluation is more and more considered as part of building knowledge process (Segers, Dochy, Cascallar, 2003) While enhancing the meaning of learning as a process of knowledge creation in a social environment, teaching is more and more a scaffolding activity aimed at supporting students to operate at the edge of their competences. In this perspective assessment should provide feedback on where students are and how they could be supported to progress further, in order to promote meaningful learning. This occurs when learners are actively involved and have the opportunity to take control of their own learning process. Under this perspective the main role of assessment consist in providing feedback to learners, emphasising metacognition, self-assessment and the transferability of knowledge and competences acquired within other settings (Packer, Goicoechea 2000). Assessment should be as much contextualised as possible, in order to allow learners to show their deep understanding of concepts and the related frameworks. During assessment procedures a student should be asked to make explicit his/her own learning processes and the feedback of assessment should not only give information about what students already know but also on what they could do to improve their competences (Bransford et al. 2000).

Wiggins (1998, p. 7) stated: *"the aim of assessment is primarily to educate and improve student performance, not merely to audit it."*

A few authors underlined the change of perspective in the practices, tools and aims of assessment. Kulieke, Bakker, Collins, Fennimore, Fine, Herman, Jones, Raack, Tinzmann in 1990 and then Segers, Dochy and Cascallar in 2003 pointed out a few key directions that assessment is acquiring in its debate and is applying into educational practice and synthesised it in the following figure.

Figure 2 Directions in assessment



The authors emphasised on the shift from de-contextualisation to authenticity, from single to multiple measurements, from a low to a high assessment of comprehension, from assessing a few to many dimensions of intelligence, from the separation to the integration between assessment and learning processes and from the idea that assessment is teacher directed to the notion of student's responsibility in evaluation.

In this culture of assessment students play the role of active participants, sharing purposes, goals, criteria, instruments in order to be able to reflect on their own learning path, improving their competences, using feedbacks to adjust their cognitive strategies, skills and behaviours.

The notion of authentic assessment, which has been often emphasised in the debate (Rennert-Ariev, 2005), is central among the topics cited above.

Darling and Hammond (2000) describe authentic assessments as the one that integrates multiple types of knowledge and skills; relies on multiple sources of evidence collected over time and in different contexts and are evaluated using codified professional standards. Wiggins (1989) affirms that assessments need to be characterized by students' active engagement, exploration, and inquiry. Newmann and Wehlage (1993) sustain that authentic assessments help students create "discourse, products, and performances, that have value or meaning beyond success in school" (p.8).

This synergy of assessment, learning strategies and teaching practices lead to another key concept of the debate on assessment in education: the notion of formative assessment that has been first defined and opposed to summative assessment by Michael Scriven in 1967. Scriven considered evaluation as formative when providing information to assess the effectiveness of a curriculum and guide educational further choices. With a view to teaching and learning processes Bloom (1968) applied the notion of formative assessment to define it as a tool for improving the teaching-learning process for students. The debate on formative assessment moved from these complementary visions: the first with a view to the evaluation of learning environments and curricula and the second to teaching and learning processes. In both cases formative assessment leads to educational decisions, actions and awareness. In the current debate formative assessment is considered in its potential to enhance learning and performance (Ketchagias 2011). Harlen and James (1997) describe formative assessment as the assessment that is directed towards promoting learning and that is therefore part of teaching practices. Formative assessment takes into account the progress of each learner, does not refer to fixed criteria and, moreover, provide diagnostic information. Students play a central role in this function of assessment: they are requested to be active in order to understand their strengths and weaknesses and to decide how to improve and progress in learning path. Feedback is a key aspect of formative assessment because it clarifies the expected performance (Huhta 2010) and helps students becoming aware of their learning efforts. This educational attitude also lead to motivate students and develop their self-assessment competences (Nicol Macfarlane-Dick 2005).

TRANSFERABLE COMPETENCES IN HIGHER EDUCATION: EXAMPLES FROM BULGARIA, FRANCE, ITALY, NETHERLANDS AND THE UK

Within the framework of the SOCCES project there have been conducted several studies amongst lecturers, experts and students of the SOCCES partner institutions as well as business partners the organizations are working with, to analyze and draw conclusions based on the understanding and defining transferable skills and competences; current assessment processes in selected curricula in relation to transferable skills and transversal competences' assessment; existing virtual infrastructure supporting the learning process in acquiring transversal competences; educational methodologies and tools for transversal competences. The information has been collected, consulted and gathered by the SOCCES project team at the respective university based on surveys and interviews among other colleagues, teachers, administration, management and students of the respective university. The studies conducted within the framework of the SOCCES project recognize that there is a variety of approaches to the development of transversal competences (skills and competences relevant to work), with an associated range of assessment methods.

Understanding and Teaching

The understanding of transferable skills amongst the SOCCES partners has one common perception and it is that they are related or directly connected to employability.

In terms of transferable skills being defined in the SOCCES partners' curriculum, half of the educational institutions confirm this being the case and half state that they have actually not been defined within the curriculum studied.

As for whether the transferable skills are part of specific courses or are being taught in separate courses, none of the SOCCES partners has adopted a 'subject-free' approach. It is generally recognised that the majority of transferable competences are not tied to any particular subject and are needed alongside all areas of study. Hence developing a cross-curricular

framework is the approach taken by most of the SOCCES educational institutions that have explicitly addressed key and in particular transferable competences. This is also because key competences in general are not learned discretely but more than one may be developed at the same time.

As the study shows, the implementation of transversal (transferable) competences requires attention to the social context of learning, and consideration of all the influences upon a learner's ability to both acquire and transfer what they learn at university.

The definitions of Transversal competences used within the partnership consortium are based on the European Commission report (2011), encompassing the following range of sub-skills:

No	*Type of skills*	*Sub-skills*
1.	Communication Skills: the skillful expression, transmission and interpretation of knowledge and ideas.	• Speaking effectively • Writing concisely • Listening attentively • Expressing ideas • Facilitating group discussion • Providing appropriate feedback • Negotiating • Perceiving nonverbal messages • Persuading • Reporting information • Describing feelings • Interviewing • Editing
2.	Research and Planning Skills: the search for specific knowledge and the ability to conceptualize future needs and solutions for meeting those needs.	• Forecasting, predicting • Creating ideas • Identifying problems • Imagining alternatives • Identifying resources • Gathering information • Solving problems • Setting goals • Extracting important information • Defining needs • Analyzing • Developing evaluation strategies
3.	Human Relations Skills: the use of interpersonal skills for resolving conflict, relating to and helping people.	• Developing rapport • Being Sensitive • Listening • Conveying feelings • Providing support for others • Motivating • Sharing credit • Counseling • Cooperating • Delegating with respect • Representing others • Perceiving feelings, situations • Asserting
4.	Organization, Management and Leadership Skills: the ability to supervise, direct and guide individuals and groups in the completion of tasks and fulfillment of goals.	• Initiating new ideas • Handling details • Coordinating tasks • Managing groups • Delegating responsibility • Teaching • Coaching • Counseling • Promoting change • Selling ideas or products • Decision making with others

		• Managing conflict
5.	Work Survival Skills: the day-to-day skills that assist in promoting effective production and work satisfaction.	• Implementing decisions • Cooperating • Enforcing policies • Being punctual • Managing time • Attending to detail • Meeting goals • Enlisting help • Accepting responsibility • Setting and meeting deadlines • Organizing • Making decisions

Assessment

In education, the term assessment refers to the wide variety of methods that educators use to evaluate, measure, and document the academic readiness, learning progress, and skill acquisition of students from preschool through college and adulthood.

Assessment issues are central to the education research literature, where there is widespread recognition that assessment strongly influences teaching and learning (P. Black, 1998; Koretz, 2005; Stobart, 2008b). Key competences arguably represent a valuable but complex view of learning. A particular risk is that if only a few competences are assessed, assessment will distort the curriculum, leading to the neglect of other competences. Furthermore, if only limited aspects of these competences are assessed, they will be distorted too. Thus if only knowledge is assessed, the development of skills and attitudes will be, at best, incidental.

The potential of assessment is that, rather than only assessing the learning that is easy to assess, it will tell us about the learning that is, by consensus, important. Crucially, assessment will then result in increased time and effort spent on this learning. Assessment will therefore support effective changes not only in what is taught but also how it is taught, and consequently what is learnt and how it is learnt. In other words, assessing learners' key competence not only documents learners' key competences but is also essential to the development of learners' key competences. It is therefore doubly important to have some basis for evaluating assessments of learners' key competences.

What is really striking and relates to the objectives of the current project (SOCCES) is that in relation to external summative assessment, Eurydice (2009) found that, of the eight key competences:

> '…only three, namely communication in the mother tongue, communication in foreign languages, and mathematical competences and basic competences in science and technology, can be directly linked to individual subjects… these three competences are the ones most commonly assessed in national tests. By contrast, in many European countries the remaining key competences such as 'learning to learn' or social and civic competences, which usually relate to more than one subject, are not at present generally assessed in national tests'.

It will be noted that there are particularly few, if any, Member States whose national testing systems were reported as assessing the last four key competences: learning to learn, social and civic competence, sense of initiative and entrepreneurship or cultural awareness and expression. A note of caution should be struck: these competences may be implicitly assessed through national tests, or explicitly assessed through methods other than these tests. However, national testing systems tend to reflect the priorities of education systems and the evidence suggests that, although highly valued, these four key competences are much less widely assessed. In fact, the focus of national testing is mostly limited to mother tongue and mathematics competences (individual subjects).

For assessment purposes, the self-regulated learning research therefore suggests a higher profile for classroom and workplace observation and dialogue than for questionnaires and tests. Furthermore, if self-regulated learning implies self-control informed by accurate self-monitoring, then an important role for self-assessment is also implied. Moreover, this need not be limited to

formative assessment. Comparison of self-assessments and expert assessments yields useful information about the apparent accuracy of students' self-monitoring of their learning outcomes (Winne, 1996).

Based on the study conducted there have been identified two major issues. Firstly, when learning outcomes are over-specified, holistic competences are reduced to atomised tasks. Teaching, learning and assessment is then characterised by the following of scripts provided by long check lists of actions and behaviours. However, competence-based education should be 'more than an effort to describe or list educational and behavioural objectives'. Rather, when competences are specified, it should be the case that 'the whole is greater than the sum of the parts' (Council on Education for Public Health, 2011, Competences and Learning Objectives. Washington, p.1). Secondly, the need for assessment to be relevant to complex contexts, including occupational contexts and social contexts more generally, means that assessors need to be able to exercise their judgement in any given set of circumstances (Cedefop, 2010). In other words, they operate with a complex, internalised, and holistic model-not a simple set of descriptors lifted from a printed set of performance indicators.

Thus the study shows that rather than a single acceptable outcome, performance can be demonstrated in different ways in different contexts according to individual attributes (all partner institutions). Training and development for a shared understanding and consensus amongst assessors therefore seems essential. In this way, outcome specification and assessor judgement can be balanced to ensure the validity (and reliability) of assessments.

The precise balance between specification of learning outcomes and the judgement of assessors will also partly depend on the assessment purpose. Thus the learning outcomes for summative assessment for a qualification will be more tightly specified than the learning outcomes for formative assessment within the university curriculum. Regardless of the degree of specification, it should be possible to trace the outcomes back to the broad domains defined in the European Reference Framework, or in national documents, and their holistic view of learning.

It has been clearly identified that students gear their learning behaviour to the assessment method used. The way in which tests are carried out in education directs what a student learns and how a student learns to a great extent. As the SOCCES partner institutions argue – objectives will only be achieved in competence-based education if the assessment forms and teaching are adjusted to it. The student's development of competences will be hindered if competence-based education is assessed by means of traditional types of assessment.

Another remark to be made is that the focus is on a development-oriented approach of learning and testing. Assessment supports learning, and learning supports assessment.

Competence-based assessment means that professional behaviour is tested in a realistic context as well as the underlying knowledge and skills pertaining to that behaviour.

All institutions confirm that assessment has two functions in competence-based education, that is, formative assessment and summative assessment. Formative assessment steers the learning process to an important extent. Formative assessment provides students with important information about their competence development. Students may make mistakes without being penalised. Formative assessment can take different forms such as feedback or diagnostic testing. Summative assessment is the second function of assessment. Summative assessment is the assessment with which it is indicated that the student is competent at a certain level and, as a result, earns credits. Both functions are being used by the partners and identified as such when discussing assessment of transversal competences.

The learning process is not only directed by summative assessment. The study even shows that summative assessment provides limited steering of the learning process. Especially formative assessment influences students' learning behaviour to a large extent. Formative assessment is assessment oriented on developing competences without attaching a mark and credits although it is important to have a "score" realised. Formative assessment can be set up in various ways, for example, peer feedback, diagnostic testing, interim feedback given by experts, use of learning tasks, etc.

Apart from the functions of assessment, some three general characteristics of competence-based assessment can be distinguished based on the study conducted:

- development-oriented assessment of competences;
- multiform assessment. A competence consists of many facets, and this requires several methods and angles, a method mix;

- repeated assessment. A single measurement cannot determine whether a level of competence has been achieved.

The study also confirms that using a method mix in assessment is essential to compensate for strengths and weaknesses of tests in reliability and validity. As such, there is no 'best method. "All types of test have a weak link that affects the validity of conclusions on the student's qualities. Since the various methods do not all have the weakest link in the same place, a method mix should be preferred (Cedefop, 2001)."

CONCLUSION

21st century has started with the inherent characteristic of change, being the "universal truth" education and business strive to be in compliance with. The question of "how" has moved aside the question of "why" and the complexity it entails unfolds new possibilities for coping with change, translating it into educational innovation and new enterprise logic.

The concept of key competences originated with the adoption of the Lisbon Strategy in 2000 and it resulted in the European Reference Framework. Key competences in the EU framework are those that "all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment". As most of the European educational policies state, the development of key competences should include both subject-based and transversal competences that will motivate and equip students for further learning.

However, each competence consists of invisible layers such as personal characteristics, knowledge and skills, motivation and views, making it a complex construct. Students' competences will not be visible until they display their behaviour in an authentic professional context. Namely this requires a completely new and at the same time complementary approach towards understanding, teaching and assessing transversal/transferable competences. "Using a method mix in assessment is essential to compensate for strengths and weaknesses of tests in reliability and validity. As such, there is no 'best method'. All types of test have a weak link that affects the validity of conclusions on the student's qualities. Since the various methods do not all have the weakest link in the same place, a method mix should be preferred (OECD, 2001)."

The literature review, the good practice analysis as well as the studies conducted so far within the SOCCES projects confirm the importance of undertaking a new path, where competences guide the flexibility of structures in education and allow for an innovative touch in translating knowledge into practice.

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