

LEARNING FOR AN UNPREDICTABLE FUTURE: WHAT COMPETENCES FOR EDUCATORS

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ABSTRACT: In 2011 the UNECE produced a document, “Learning for the future” aiming to identify a framework of core competences for ESD educators. In 2015, the Erasmus plus project “A Rounder Sense of Purpose” started a reflection on the UNECE document aiming to transform that document in an effective tool to be used for building, assessing, awarding the competences educators need, in formal and informal education, in order to face a rapidly changing world.

While the UNECE document, and the RSP project, are addressed to ESD educators, the authors of this communication propose to apply the RSP competences model to all educators, across different levels and disciplines. Preliminary results from experimenting the model across different cultural and educational contexts will be presented during the Conference.

KEY WORDS: Sustainability Science, Educators Competences, Evaluation Models.

THEORETICAL FRAMEWORK: SCIENCE AD EDUCATION IN A CHANGING WORLD

The UN Agenda 2030, established in 2015, asks to “*take the bold and transformative steps which are urgently needed to shift the world on to a sustainable and resilient path.*” The Agenda provides for a global transformational vision, requires deep cultural, scientific and societal paradigms shifts, and finally calls for a win-win cooperation through the engagement of all actors. Education has a major role in the Agenda, as a specific Goal - Goal 4 - to ensure ‘*quality*’ education for all’ and as a main tool to reach the whole set of the proposed goals. But, what ‘quality’ means in a changing society towards a sustainable world and what competencies should have a qualified teacher?

Our unsustainable world, in fact, requires transformations which call for a new vision for both ‘knowledge’ and ‘education’. Traditional vision of Science characterized by separated and isolated disciplines, a search for objectivity, consistency within disciplinary borders and detachment from common thought, should be replaced by a new vision generating new type of Science which is characterised by the continuous involvement of non-academic actors in the knowledge production process, and by the adoption of a wider vector of research practices, such as trans-disciplinarity, community-based, interactive or participatory approaches (Wiek et al., 2012).

As a solution-oriented, transformative endeavour, ‘Sustainability science’ promises to provide an answer to this need, bringing together research and practice, global and local perspectives, disci-

plines across the natural, technological and social sciences. It could be conceived as “*a field defined by the problems it addresses rather than by the disciplines it employs; it serves the need for advancing both knowledge and action by creating a dynamic bridge between the two.*” (Clark, 2007)

Sustainability Science is characterised by being intrinsically not only interdisciplinary, but also transdisciplinary, that is open to the contribution of local society and referring to ‘post-normal science’ as defined by Funtowicz and Ravetz (1993)- As proposed by Benessia et al. (2016) the crisis science is facing is not only methodological and organizational in nature, but also ethical and metaphysical. To deal with this Science crisis it is necessary to clarify first what we need to ‘unlearn’: from a vision of science as a disinterested practice to the myth that any problem of natural or social origin, can eventually be solved through the accumulation of hard facts.

Education is facing a similar crisis: can we really define a set of objective facts and knowledges every citizen should learn? Or we need to shift from knowledges and disciplines, to the basic competencies a citizen needs in order to fully contribute, in its own context, to the development of a responsive and sustainable society?

The shift from knowledge-based Education to competences-based Education, requires, as for the shift from normal to post-normal Science, re-orienting our educational practices and engaging ourselves in the direction of a Sustainable Education (Sterling, 2001) as the natural ally of Sustainability Science.

Sustainable Education does not refer only to Education for Sustainable Development but is a challenge to education as a whole: *The term ‘sustainable education’ implies whole paradigm change, one which asserts both humanistic and ecological values* (Sterling, 2001).

Sustainable Education, in Sterling’s vision, should be at time critical and transformative, consciously values-laden and action based, local and global, participatory while developing autonomy, reflexive and critical.

MAIN RESEARCH OBJECTIVES: TO OPERATIONALIZE COMPETENCES FOR SUSTAINABLE EDUCATORS.

The challenge of Competences-based Education started at the end of last century: the OCDE DeSeCo project presented in 2002 the concept of competencies as an answer to ‘*an increasingly diverse and interconnected world*’ and defined them as “*more than just knowledge and skills. It involves the ability to meet complex demands, by drawing on and mobilising psychosocial resources (including skills and attitudes) in a particular context.*”

The European Union, in the 2006 document ‘Key competences for lifelong learning’ defined competences as: “*a combination of knowledge, skills and attitudes appropriate to the context. Key competences are those which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment.*”¹

The UNECE strategy (2005), accompanying the UN Decade for ESD, highlighted main transformations to be achieved in formal, non-formal and informal education. Among main objectives of the Strategy, very important ones are ‘*to equip educators with the competence to include SD in their teaching*’ and to ‘*promote research on and development of ESD*’ (p.3).

As a follow-up of the UNECE Strategy, a set of core competences for ESD Educators were proposed and delivered in 2011. The competences were organized around three characteristics, essential not

1. Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning (2006/962/EC)

only for ESD but for the development and change of whatever kind of education, level or discipline: a) holistic approach, b) envisioning change, c) achieving transformation.

In the following years the UNECE proposal was often quoted and appreciated, but was rarely applied as a guide for teachers training or for educators' certification and assessment. Some of the reasons could lie in the difficulties in operationalizing the competences framework; another flaw regards the lack of clear linkages with current educational research on 'competences development'.

In 2015, the Erasmus plus project "A Rounder Sense of Purpose, coordinated by the University of Gloucestershire and involving 5 European partners with different background and expertise, started a reflection on the UNECE document, aimed to transform UNECE proposal in an effective tool for building, evaluating and, awarding the competences which educators need, in formal non-formal and informal education, in order to activate a transition into a mode that takes sustainability into account.

THE RSP MODEL FOR EDUCATORS COMPETENCES. METHODOLOGY AND FIRST RESULTS

The approach followed has seen a first activity aimed to 'distil' and 'reduce' the number of competences and at the same time to re-word them in a way that assessment of acquisition could be feasible. This "distillation" process has been carried out through dedicated group and pairs discussion using the UNECE document as a base and comparing UNECE competences set with other SD and ESD competences sets (Roorda, 2012; Wiek et al., 2015). The expected outcome of this activity was to reduce the number of competences and to express them in accordance with the largely accepted definitions of 'competences', stressing the inter-connections between knowledges, skills, attitudes and values.

The 'distillation process' was carried out by partners through different means, e.g. collecting the opinions of teachers and experts from the different countries involved, and discussing, through several 'retroactive' cycles, a re-organized and re-formulated framework of competences.

A provisional result of this process is the matrix of twelve competences showed in Table 1. The Table presents 3 columns corresponding to those of the UNECE model and four rows which are defined as Integration, Involvement, Practice, and Reflection. Each of the twelve competences is indicated by a name and by a description formulated as concrete, observable, actions put in place by the educator.

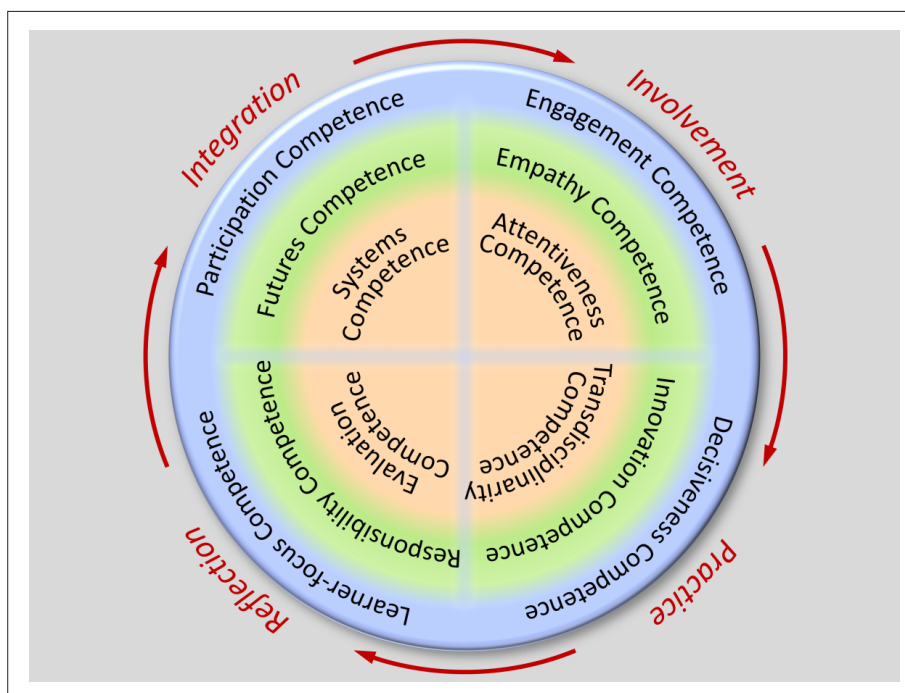
Table 1.
The twelve RSP competences

<i>HOLISTIC APPROACH</i>	<i>ENVISIONING CHANGE</i>	<i>ACHIEVE TRANSFORMATION</i>
INTEGRATION:		
<i>Systems Competence</i> The educator applies a systemic approach, moving flexibly between different perspectives and levels of complex natural and human-made systems.	<i>Futures Competence</i> The educator uses ways of imagining a range of futures as a source of inspiration.	<i>Participation Competence</i> The educator contributes towards transformations of education and, through this, towards societal transformations for sustainable development.
INVOLVEMENT:		
<i>Attentiveness Competence</i> The educator is aware of and alert to structural causes of unsustainability and the urgent need for change.	<i>Empathy Competence</i> The educator engages with emotions of others in a constructive manner.	<i>Engagement Competence</i> The educator acts from a personal sense of involvement and commitment.

<i>HOLISTIC APPROACH</i>	<i>ENVISIONING CHANGE</i>	<i>ACHIEVE TRANSFORMATION</i>
PRACTICE:		
<i>Transdisciplinarity Competence</i> The educator acts collaboratively both within and outside their own discipline, role, perspectives and values.	<i>Innovation Competence</i> The educator places their work within a real-world context, demonstrating innovation and creativity.	<i>Learner-focus Competence</i> The educator focuses on the development of the learners towards critical and actively participating members of society.
REFLECTION:		
<i>Evaluation Competence</i> The educator critically evaluates the relevance and reliability of assertions, sources, models and theories.	<i>Responsibility Competence</i> The educator accepts personal responsibility for their work, critically evaluates it, accepts to be held accountable for it, and acts transparently.	<i>Decisiveness Competence</i> The educator acts in a timely manner, based upon well-considered decisions, even in a context full of uncertainties.

Together, the four rows could indicate the cyclic process of competences development of an educator: a) starting from an integrated approach to the environmental and social transformation needed in the local educational context, b) adding to this their personal involvement and commitment, c) combining the two in their practical work as an educator, d) evaluating the process and the results of their work, and finally linking all this to assume responsibility and take decision, even in situation of uncertainty².

This cyclic process can be better grasped by the Figure below where RSP Model is represented through a circular diagram, having ‘Holistic Approach’ as the inner circle (column 1), ‘Envisioning Change’ as the second circle (column 2), and ‘Achieve Transformation’ as the outer circle (column 3).



2. RSP model as re-organized by N. Roorda, Internal RSP document, Budapest 2016

For each of the twelve RSP competences a number of learning outcomes have been formulated as a more detailed description of the competences to be developed. Actually, the model provides 2 or 3 learning outcomes for each competence, with a total of 28 learning outcomes. For each of them a 'rubric' describing different stages will be added, in order to distinguish between different levels of competences achievement, from apprentice to mastership, and use the assessment process as a tool to foster professional development of educators.

The model will be validated and improved through a number of experimentations and pilot testing which are planned to take place along this year across different contexts and using various modalities: by focus groups involving teachers, environmental educators and scientists; by implementation of specific training modules within a number of higher education and vocational training courses.

The assessment/certification approach which is expected to be defined by the Project is a challenge in itself. Every cultural product, every discipline, including sciences, is deeply grounded on values systems and cannot pretend to be objective. This means that every educational evaluation practice cannot be seen as a 'measure' – although references to 'measurements' are proposed in most of educational evaluation literature –. This is a confirmation that the 'positivistic paradigm' (Robottom and Hart, 1993; Mogensen et al., 2009) is still dominant in educational research, and the shift toward a 'sociocritical paradigm' is not only difficult to be operated but also difficult to be accepted by academy and policy makers.

The authors of this communication propose an approach aimed to 'give value' to the process of competences development, following transparent and straightforward criteria, established through a set of 'learning outcomes' and described in a 'rubric', taking care of the educator working context and seeking to allow a comparison among different points of view.

PROVISIONAL CONCLUSIONS

The debate over the model, which has been carried out so far in different working environment setting and different countries, confirms the authors' premise that the proposed ESD competences could be seen as general competences for educators, useful and usable for whatever discipline, in a vision of transformative social learning (Lotz-Sisitka and al. 2015).

The model, which is expected to be delivered at the end of the project, promises to be appreciated by all people engaged in overcoming the disciplinary boundaries in favour of transversal, critical and 'transgressive' knowledge-production process. The expected implementation and experimentation will allow to verify its consistency, usability and efficacy for the development of Sustainable Educators Competences.

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