

Competences to Deal With the Sustainable Development Goals

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Abstract

The sustainable development goals run the risk to be only present in the official discourses without an effective integration in the research and innovation practice. UNESCO and EU have developed competence frameworks for sustainable development education, but these are strongly focused on formal and non-formal education environments. But learning in innovation processes is intentional informal learning, requiring procedures of competence development more adequate to adult learning and open innovation processes. The implications in science-based innovation processes suggest conceiving them as amutual learning processes between the multiple actors involved. In any sustainable innovation process, the objective is the development of sustainable competences to promote not only the innovation envisaged but also social innovation promoting sustainable understanding of the relation between human beings and their ecological and social environment. However, a weakness of the responsible research and innovation processes is that it leaves aside the responsibility. Just limited (and vague) references to the human rights and ethical standards valid in the EU is not enough. We developed (and used and prepare material) 64 individual competences. The competence atlas was used for the development of a flexible framework for sustainable competence as a tool for the tailored design of learning programs in areas three key areas: water management, waste management and environmental protection. As innovation process learning it should be open, but oriented to specific goals, including the implications derived from public engagement. The triple, quadruple, and quintuple helix approaches of expressed well these challenges.

Keywords: Sustainability, Competences, Adult Education, Third Mission

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Introduction

The Erasmus+ project 5P competences aims to develop a competence framework tailored to the specific needs of adult education in the field of sustainable development. The competence framework is intended to support the development of courses on sustainability topics, helping to ensure that educational offers are tailored more precisely to the needs of the course participants.

This approach addressed the Third Mission of the Universities contributing to education for sustainability for the whole population. It addressed not the formal education offers of the universities, but its wide range of activities including citizens science project with sustainability contents. The project aims to develop an online sustainable framework of competences that adults must learn in the way to sustainable action. The program organizers can manage activities to design, implement and evaluate their programs on sustainability topics.

In the first stage of the project, policies documents on adult education in the countries covered by the project (Germany, Greece, Romania and Spain) were analyzed for its relevance for the project objective. The results confirm the impression that adult education for sustainability is an underdeveloped area at all education levels. This is confirmed by the analysis of relevant international references published by the United Nations e.g., Incheon Declaration, the UNESCO's education for sustainable development goals (UNESCO, 2017) or the European Union' Green Competence framework (EU, 2022).

From the perspective of informal adult education, these documents are insufficient for several reasons:

- The learning objectives and the competences are formulated in a very general manner. That means that the justification of their relevance does not necessarily cover the concept of sustainability e.g., like 'systems-thinking competency', strategic competency' or 'self-awareness competency' (UNESCO, 2017, p. 10).
- The educational objectives are primarily connected to formal learning at schools, VET and universities. These catalogues are not connected to problems or situations of everyday life. But the everyday life is the reason for informal learning.
- It is (nearly) impossible to deduce hints for pedagogical actions out of analytical categories which are giving reasons for weighting the educational objectives (or competences) for individual persons or which are giving reasons for the order in which the parts of the competences can or should be taught.

Adult education on sustainability and the respective competence development should address more situations of everyday life outside the formal education environment and the professional life. To do so, 5P-Competence used the development tasks approach as originally proposed by Havighurst (1972) and further developed, for instance, by Hurrelmann (1986) for his socialization approach. We take this approach as a reference for the development for general development tasks in relation to sustainable development.

Looking at the literature there are three concepts standing in the foreground that are relevant for the competences for sustainability and the learning objectives: Generation, justice and responsibility:

- The topic of generation is closely connected to sustainability and is explicitly mentioned in the competence framework GreenComp. The idea is, that every generation is living in a world (or learning to live in a world) that was influenced and designed by the previous generations. She overtakes the world from these generations, is continuing some things and changing others so that she can give the world to the next generation(s).
- Justice is directly mentioned in some competences of the GreenComp. It is referred to in some sustainable development goals (SDG 5: Gender Equality or SDG 10: Reduced Inequality) and it is implicitly referred to in some other goals (SDG 1: No Poverty or SDG 2: Zero Hunger).
- Feeling responsible was already addressed by Havighurst and Hurrelman. Sustainability is just another aspect of responsibility. It means being responsible for one's own actions, for one's own values and one's engagement related with sustainability aspects.

Related to these topics three developmental goals can be drawn out:

- The maintenance of the own existence and the continuance of the world for the next generations. That means the future of one's own, the future of the society and the future of the forthcoming generations. The main question that is raised is: on what (material) basis can this future be designed? This means our management of resources. The developmental task is to learn how to handle our material resources to give us as persons, other persons, and other societies a worthwhile and sustainable future.
- The second developmental task is focusing on the social cohesion of a society, on the social contact of persons among themselves and on the results of a comparison between a person and other human beings. It is about fairness and values around it. The developmental task is to create social values and a concept of social fairness.
- The third developmental task is connected to one's own position in the world. This is not ascribed as it might have been the case in former times; it is earned, and it can be assured by one's own efforts. Therefore, it is important to be convinced of one's own self-efficacy and to be engaged in sustainability as far as one's own abilities and interests allow that.

Under this perspective, in each country a search for formal and informal learning project on sustainability was undertaken with the objective to analyze if and how they address specifically these three development tasks and which actual competence they are developing.

The competence approach has gained in the last decade high relevance in the design of school and university education, as well as in IVET and CVET. It can be understood as steering a functional oriented learning process for instance to societal demands of knowledge and behavior or labor market requirements. Adult education (excluding here CVET) often has not

such functional orientation (e.g., universities' programs for older people, talks, discussion on sustainability for a broad public, broad offer of activities in civic centers or the participation of citizens science projects). Other local activities on sustainability do not even have the declared learning objectives despite that learning occurs.

To promote sustainable behavior in society, these informal learning activities are essential. In so far, the development of a framework of sustainable competence could be a useful tool to foster learning on sustainability in these activities.

The identification of a wide range of projects in sustainability and the analyze of the competences – defined in terms of knowledge, skills, and attitude – brings up a wide range of singular competences, which requires an aggregation to general competences. To do this, the project take as reference the work of Erpenbeck & Heyse (2007) who have developed a so-called competences atlas (see Figure 1). It includes 64 individual competences, which could be used to assemble profiles of competence behavior in specific areas as water management, waste management, caring of the environment, etc. This competence atlas is used as an example for the development of a flexible framework for sustainable competence as a tool for the tailored design of learning programs and other type of activities, which include learning.

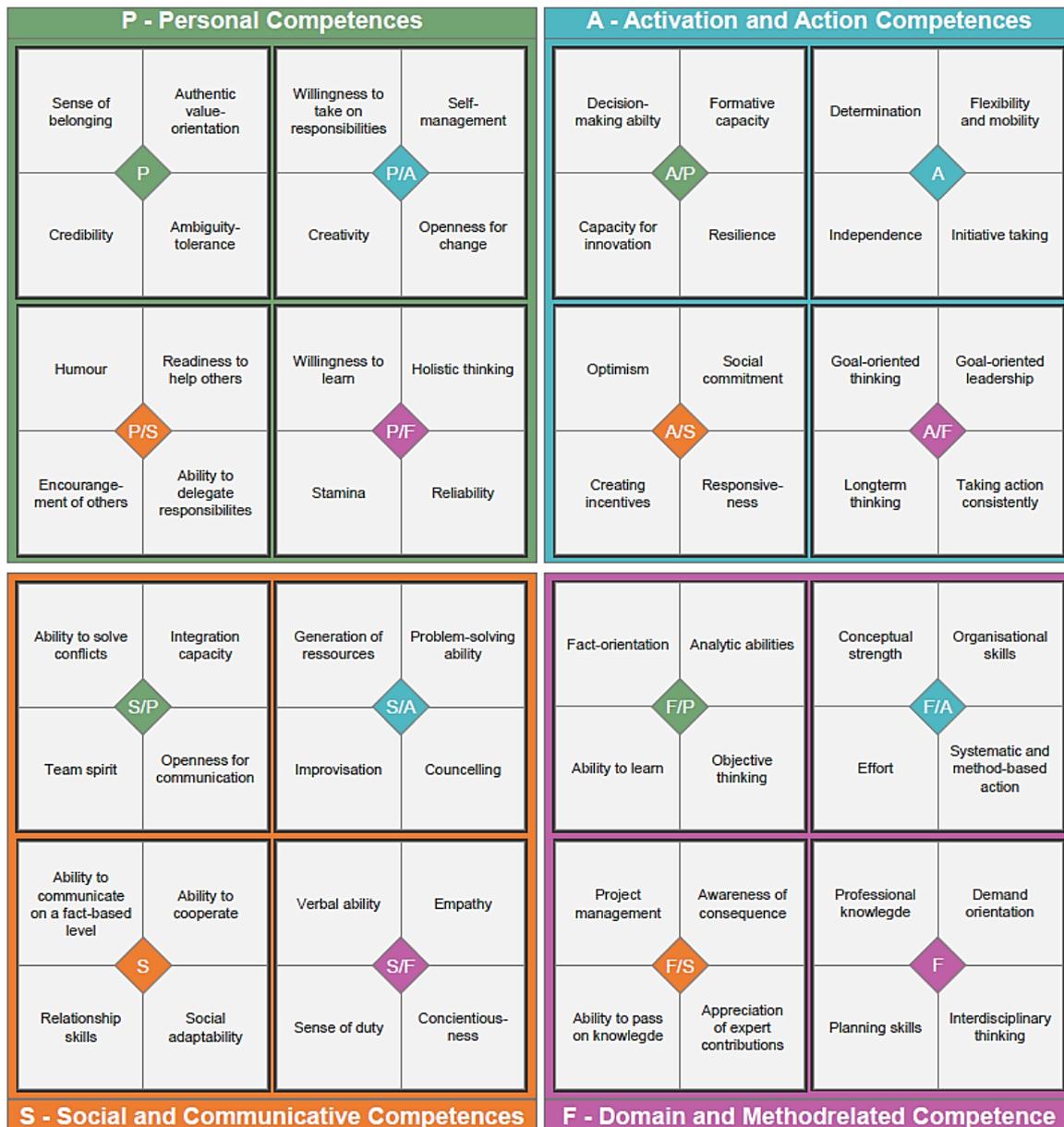


Figure 1: competence atlas for sustainable development (based on Hezse, V. & Erpenbeker, L. 2017).

In the next step the three above mentioned developmental tasks (material resources, social cohesion / justice / social fairness, self-efficacy; see also the definitions above) can be integrated into the model as it is shown by the colors red, green and yellow (Figure 2). Again, the mapping cannot be done clearly and unambiguously, but it is plausible. The marking of the competences affected by the developmental tasks shows, that there is a clear focus in the conceptual literature about ESD by the UNESCO. That does not mean that the competences that are not highlighted in the figure are not important. Their acquisition is primarily either a more general competence (such as organizational skills, verbal ability, or problem-solving ability) or it is specialized (such as planning skills or decision-making activity).

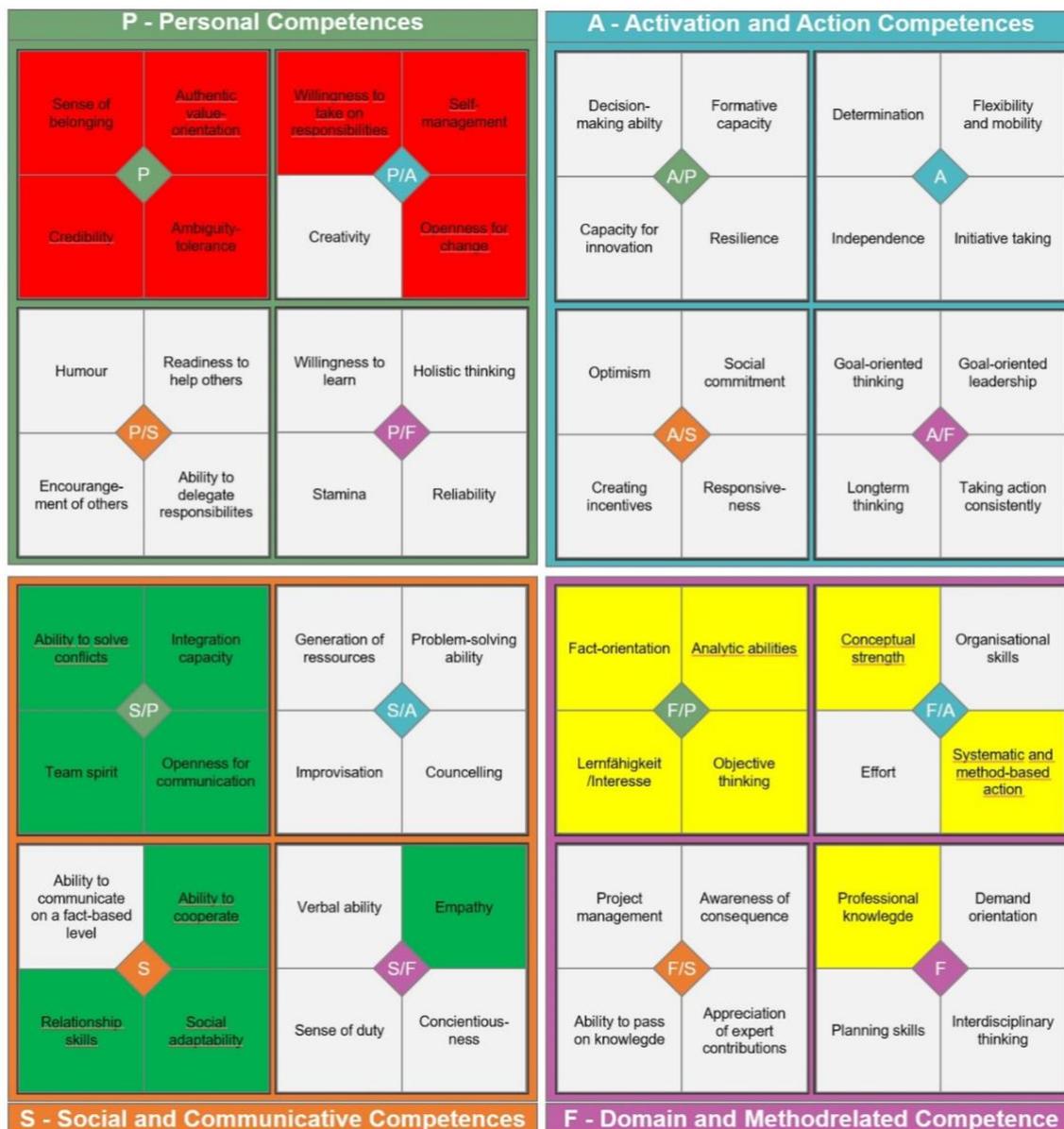


Figure 2: 5P competence atlas - developmental tasks (based on Hezse, V. & Erpenbeker, L. 2017).

Our competence framework is derived from integrating projects in the field of ESD on the international, national, and regional level in each country. For this purpose, the competences that are required to reach the goals of the projects mentioned are deduced from information gathered from projects and initiatives in the field of sustainability development. Therefore, categories are created inductively from the projects' goals mentioned. The categories can be subordinated to the developmental tasks, and they can so be integrated into the competence atlas as well.

Conclusions

Independently from the coding of the competences it is important to mention the level, the projects are aiming at the psychological distance of the actions and works, and the goals connected with them. According to Bronfenbrenner's social-ecological socialization theory the following differentiations are important:

- Micro level: Actions that are directly connected to a person or those who are in a direct contact with her.
- Meso level: Actions aiming at the (personal) environment of a person, including for example persons who are closely connected to each other such as family or close friends.
- Exo level: Actions referring to groups or events in the direct environment of a person. An environment in which persons are not a member by themselves, but which has a strong effect on the possibilities of action, such as changes for sustainable consumption or sustainable usage of energy.
- Macro level: Actions aiming at things that relate to the whole of a society, such as values, conventions, traditions, rules and regulations, laws, or ideologies.

More than three quarters of the projects are located on the micro level, which is corresponding to the fact, that informal learning is the focus of this project. Nearly 37 % of the project are connected to the macro level. That means that they are aiming at a political level. Most of the projects are affecting more than one level.

Similar to that are the results concerning the developmental tasks. Most of the projects (75 %) are aiming at competences concerning material resources, 54 % on competences concerning self-efficacy and 56 % on competences concerning social values.

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