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Sopron, 2022. november 3.

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TÁRSADALOM – GAZDASÁG – TERMÉSZET: SZINERGIÁK A FENNTARTHATÓ FEJLŐDÉSBEN

SOCIETY – ECONOMY – NATURE: SYNERGIES IN SUSTAINABLE DEVELOPMENT

Szerkesztők / Editors:
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Competencies for Sustainable Development

Zsuzsanna NAGYNÉ HALÁSZ [1]
PhD Candidate,
Assistant Professor
University of Pannonia, Faculty of Business Administration, Zalaegerszeg - Hungary

Abstract
In our days, humankind is faced with complex global problems, such as climate change, overpopulation, famine, the destruction of the flora, desertification, and increased migration. The capitalist value system, the aspiration for profit maximisation, continuous development and growth is coupled with the depletion of natural resources, increased environmental pollution, and social tensions. Sustainability and the concept of sustainable development provide an opportunity to check these destructive trends. However, an attitude change is required for this. Education is going to play a significant role in moulding the environmentally conscious way of thinking and creating the competencies of the coming generations in sustainability. This study presents this topic based on literary research.

Keywords: Sustainability, Sustainable Development, Competencies
JEL Codes: I23, O13; Q01

1. Introduction, aims and objectives

We must regrettably note that nowadays the balance among the natural environment, the economy and the society is upset. The main reason for this is the enormous rates of population and economic expansion, which lead to the excessive use of natural resources and the destruction of the ecological environment. Not only the well-being of the coming generation but already that of the current generation is at risk. Sustainable development requires a change in social and economic attitudes, and educational institutions have a significant role to play in it. The author's aim is to conduct a questionnaire-based quantitative survey on the sustainability competences of university students on the input and output ends of their university programmes. This research would allow a comparative analysis of conventional training programmes and practical and interactive training programmes. Conducting a literature review is a prerequisite to achieving this goal. This paper provides a brief summary of the findings of secondary research. First, sustainability and sustainable development is presented through their analysis from various aspects. This will then be followed by a discussion of the concept and content of competencies. Then the competencies for sustainable development will be described. The final part of the paper proposes innovative approaches to education in order to close the gap between the competencies currently imparted in training programmes and those required for achieving sustainability.

2. Literature review on sustainability and sustainable development

The sustainability of economic growth has become a significant research question since the 1960s. In his research, Boulding (1966) highlighted the importance of replacing theories assuming open systems endowed with unlimited opportunities with those that regard Earth as a

[1] nagyne.halasz.zsuzsanna@zek.uni-pannon.hu

closed system. The author investigated the dangers of infinite growth and the depletion of natural resources. In 1972, the report of the Club of Rome titled *'The limits to growth'* was published (Meadows et al., 1972), which dealt with the harmful effects of population and economic growth on the environment. In the same year, the UN organised a conference on the protection of nature and the environment and presented their importance to participating politicians. The Environmental Programme of the UN (UNEP) was established in the same year, in 1972 (Hutkai & Lehoczki, 2018), which elevated the demand for environmental protection to an international level.

In his book, Brown (1981) outlined the steps of building a sustainable society. The author considered fundamental economic and social changes to be indispensable for achieving this objective. He propounded that this transition required the acquisition of new skills in which education and training would have to assume a significant role. The novelty of the paper is that the development is considered with a systematic approach. It analyses the various aspects of the economy, nature, and society as a complex whole (Szlávik, 2012).

The terms of sustainability and sustainable development are not synonyms. The former is the aim, and the latter is the way, and the activity itself, to reach sustainability (Horváth-Horváth, 2021). In a broader sense sustainability is the ability of maintaining firm and balanced development of a certain level without disturbing the harmony between the natural world and the man-made physical world (Gamage et al., 2022). According to Stoddart et al. (2011) sustainability means the efficient and just allocation of resources within and between generations, i.e., a social-economic activity accomplished within the framework of a limited ecosystem. In UNESCO's publication (2012) the following definition is given: sustainability is seen as the paradigm for thinking about the future in which environmental, societal, and economic considerations are balanced in the pursuit of an improved quality of life. Hasna (2009) believes that sustainability implies the satisfaction of basic human needs. He also claims, however, that knowledge and technology play an important role in reaching this balance. There is a heated debate over the definition of sustainability among environmental and resource economists. The conventional views of economic and nature scientists differ as to the relationship between natural and economic resources. The former hold that sustainability is a state of affairs where the sum of natural and man-made resources remains at least constant for the foreseeable future so that the well-being of the future generations should not decline (Kuhlman- & Farrington, 2010). This theory is that of 'weak' sustainability. Its representatives claim that the components of natural and man-made capital are mutually substitutable, therefore it is sufficient for their sum not to decrease. However, advocates of the theory of 'strong' sustainability hold that natural capital can in no way, or at most only to a limited extent be substituted with man-made capital, therefore natural capital must be preserved. In their view, we can talk about sustainability if in parallel with the satisfaction of the current needs of humankind, environmental and natural resources are preserved for the coming generations (Hutkai-Lehoczki, 2018).

In its report 'Our Common Future', the UN World Commission on Environment and Development defined sustainability as a form of development meeting the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987). To this day, this has been the most widely accepted definition. The commission assumed that there could happen such economic development that was less material and energy intensive in its contents, did not destroy the environment and was socially just. In case of sustainable development, growth in any of the economic, social, and natural factors can only take place in observation of the sustainability of the other two factors (Czippán & Könczey, 2021). Yet, the three factors are not on a par. Development is not sustainable unless its rate is below the carrying capacity and tolerance of the natural environment, that is, within the so-called ecological boundaries (Gyulai, 2013). Sustainability is not some static paradise, but rather the capacity of human beings to continuously adapt to their non-human environments by means of social organisation.

Sustainable development is a process through which people will need to learn to live more in tune with the environment (Scott, 2002). According to the author this will not be taking place where learning is not happening. Blignaut et al. (2014) added to the strategies required for achieving sustainability. In the authors' view development is sustainable if the following three criteria are met:

- technological change in the economic systems;
- social behavioural change; and
- greater investment in the restoration of natural capital.

In this paper, I examine the role of education in providing the competencies for sustainability and for changing social behaviour. I have earlier shown that a number of studies have dealt with the influencing role of learning and teaching. Having recognised and aiming to bolster this effect, the UN launched the programme 'United Nations Decade of Education for Sustainable Development' (2005-2014) with the overall goal of integrating the values inherent in sustainability and environmental education into all aspects of learning (Thomas, 2009). Then in 2015, the UN defined its 'Sustainable Development Goals' (2016-2030), which identified 17 areas for improvement. Among them we can find the need for providing quality and life-long education. Further targets include the provision of education for sustainable development and sustainable lifestyles and opportunities to acquire the knowledge and skills within the educational system (UN, 2015).

3. Interpretive approaches to competencies

The term 'competency' refers to an underlying characteristic of a person that results in effective or superior performance (Armstrong & Taylor, 2014). A 'competent' person is successful in a given activity (Akkermans et al., 2013). But what characteristic brings success in the world of work?

The different definitions of competency initially emphasised the importance of knowledge. Nowadays studies are being published that highlight the importance of individual and collective knowledge and cognitive skills (Hanushek & Woessmann, 2015). However, McClelland (1973) confirmed with the help of his research that the intelligence tests universally used in the US (e.g., in education and recruitment) and focused on measuring knowledge are incapable of predicting a student's success in education or an employee's suitability in the world of work. In the author's opinion the concept of competency should include not only knowledge and skills but also behaviour (conduct) and personal skills. The research analysed the characteristics of occupational status and success, or lack of success, respectively, based on the employees' behaviour and conduct. Having investigated various factors the author claimed that there was no correlation (relationship) between educational success and occupational suitability.

Rychen and Salganik (2003) state that competencies encompass knowledge, skills, abilities, and dispositions that are required for meeting current and future challenges.

According to Winterton and Delamare (2005) competencies are integrated constructs that combine the defining elements of the individual's occupational success in a structured and dynamic way. These elements being knowledge, personality traits, attitudes, motivation, skills, and abilities. This broader interpretation appears in the research of Berde et al. (2006). They define the following groups of competencies:

- knowledge;
- skills and abilities – the skills required for completing tasks (physical and mental characteristics) and learnt activities (abilities);
- attitudes and values – forms of behaviour and conduct influencing the work quality and work performance, and patterns of thinking and acting (Borszéki, 2021);

- personality traits (character) – physical and psychological characteristics;
- motivation – controls and influences behaviour and conduct.

In his paper, Nemeskéri (2014) applies the broader definition of competencies but offers a different categorisation to the one suggested by Berde et al. (2006). Besides knowledge, skills and abilities, personality and attitude appear in combination, including motivation, as the third category.

The application of the extended concept of competencies has become the norm both in the labour market and education. Still the various components are listed in different categories and with different names in the various studies and fields.

We can also find an interpretation according to which competency is the combination of hard and soft skills and abilities (Szászvári et al., 2019). In their view hard skills include knowledge (cognitive skills) and the skills and abilities required for task completion in practical situations (functional skills). On the other hand, soft skills include personality traits, motivations, and attitude. Hard and soft skills are differentiated between in several studies (Babić & Slavković, 2011; Tóthné, 2019).

In other contexts, hard skills are also referred to as technical skills (Farkas & Nagy, 2008; Armstrong & Taylor, 2014) whereas soft skills as behavioural skills (Armstrong & Taylor, 2014; Augustine et al., 2019).

There seem to be several definitions of competencies. One thing is shared by all of them though: competencies refer to personal traits and abilities that allow the given individual to successfully perform their tasks in a given context.

4. Sustainability competencies, or competencies for sustainable development

Among the 17 Sustainable Development Goals of the UN there is quality education and providing and disseminating knowledge and information related to sustainability is set as a target that might contribute to changing human behaviours and attitudes and to creating environmental awareness. The research conducted by Hadjichambis et al. (2015) found that young people have become disconnected from nature. Little do they realise or comprehend how harmful their consumption to satisfy their needs is for the environment and this leads to unlimited consumption. The authors' pilot environmental educational programme confirmed the assumption that education indeed helps to create sustainable consumption behaviours in children that may lead to pro-environmental decisions. Based on her research conducted among students of secondary and higher education, Majláth (2009) found that the higher level of education the students participate in, the broader their knowledge in terms of sustainability and environmental protection. However, several studies have proved that possessing knowledge and information related to sustainable development is a necessary but not sufficient condition for changing behaviours (Kollmuss & Agyeman, 2002; Majláth, 2009; Frisk & Larson, 2011; Zsóka et al., 2011; Major, 2017). There is a need for enhancing student motivation and embedding values and for this reason the broader interpretation of competencies must be used in training programmes. Education for Sustainable Development (ESD) must make it possible for every person to acquire the knowledge, skills, attitudes, and values required for creating a sustainable future (Hadjichambis et al., 2015). Kollmuss and Agyeman (2002) proposed the concept of 'pro-environmental awareness' that will lead to sustainable behaviour. It is the complex system of environmental information, social and personal values, and attitudes, which, along with personality traits, further internal factors (for example, needs and avoidance of discomfort) and external factors (social, cultural, and economic) influence the individual's behaviour. Various authors believed that certain key competencies could be defined that were vital to sustainable development.

Kopasz (2019) and Majláth (2009) both defined competencies required for activities to advance sustainable development:

- Knowledge of environmental systems and their operation;
- Knowledge of the ways of achieving sustainability goals;
- Knowledge of the consequences of decisions in harmony or in contrast with the goals of sustainable development;
- Knowledge of social norms (based on customs and traditions) and moral (ethical) norms related to sustainable development; and
- Knowledge of the consequences of environmental problems.
- Systemic approach.
- Critical thinking.
- Creative thinking.

In their research, Svanström et al. (2008) investigated the learning outcomes of education for sustainable development in the context of higher education, more specifically, what characteristics a student should possess from whom we may expect the advancement of sustainability. The authors expect the successful 'change agents' to have the following competencies:

- Systemic or holistic thinking;
- Interpersonal and intrapersonal skills;
- The ability to integrate different perspectives;
- Good problem-solving skills and abilities;
- Critical and creative thinking;
- The ability of self-learning and continuous learning;
- Communication skills; and
- The ability to collaborate in a team.
- Knowledge of the environmental, economic, and social issues related to sustainability, and understanding their interrelationship.
- A value system and motivation to change individual decisions and actions.

Sherren (2008) identified the following competencies for higher education graduates in terms of sustainable development:

- Critical thinking;
- Independent inquiry and problem solving;
- Creativity;
- Sensitivity;
- Empathy;
- Foresight;
- Self-expression;
- Broadened perspectives.

In their research, Albareda-Tiana et al. (2018) applied four groups of competencies in pre-service teacher training:

- Competency in the critical contextualisation of knowledge through linking social, economic, and environmental issues at a local and/or global level;
- Competency in the sustainable use of resources and in the prevention of negative impacts on natural and social environments;
- Competency to participate in community processes that promote sustainability;
- Competency to apply ethical principles related to sustainability values in personal and professional behaviour.

In their paper, Wiek et al. (2011) defined the following key competencies for sustainability:

- Systems-thinking competence (to analyse complex systems by comprehending, empirically verifying, and articulating their structure, key components, and dynamics, cause and effect relationships, sustainability issues and problem solving).
- Anticipatory competence (to craft and analyse mathematical and statistical pictures of the future).
- Normative competence (to map and apply sustainability values, principles, goals, targets, and risks; the issue of integrity).
- Strategic competence (to design strategies towards sustainability, to create strategic concepts and activity plans).
- Interpersonal competence (to motivate and enable cooperation; leadership skills; empathy; ability to cooperate).

In their research, Frisk and Larson (2011) determined four key competencies for sustainability based on literary review:

- Systems thinking and an understanding of interconnectedness;
- Long-term, foresighted thinking;
- Stakeholder engagement and group collaboration; and
- Action-orientation and change-agent skills.

5. Opportunities to acquire competencies for sustainability in higher education programmes

Higher educational institutions are expected to play a major role in creating competencies for sustainability since they are the ones to turn out future managers, teachers, and key professionals as well as political and economic decision-makers. This poses a great challenge for these institutions as they would generally award degrees that verified the knowledge of over-specialised and fragmented disciplines. However, the issue of sustainability calls for a complex approach (Lozano et al., 2013). Traditional higher education programmes imparting theoretical knowledge do not ensure the well-rounded acquisition of competencies for sustainable development, especially the ones related to systems and future orientation and personal participation and actions (Lambrechts et al., 2013). A new approach and novel methods are called for. Predominantly lecture-based education will have to give way to small-group workshops and interactivity. In their research, Tejedor et al. (2019) worked out 5 pedagogical strategies to improve competencies for sustainability:

- Problem-based learning. (It is a teaching and learning strategy in which students, in small groups and under the supervision of a tutor, learn to search for and analyse the information necessary to solve a sustainability related problem by determining the most adequate solutions.)
- Project-oriented (also known as project-based) learning. (It is an experiential teaching and learning method by which students solve a real sustainability problem in practice through active cooperation.)
- Service-learning. (It is an experiential teaching and learning method which integrates meaningful community service and commitment into the curriculum.)
- Case studies. (They present a situation that contains one or several problem areas that the subject or subjects must discuss, analyse, and propose solutions to. They can be individual tim for social and economic actors to change their habits and behaviours to protect and maintain our natural environment, which, at the same time, ultimately means ensuring the living conditions and well-being of humankind. This, however, presupposes that individuals have the competencies that are necessary for shaping a sustainable future. It is the task of educational institutions to ensure that these competencies be acquired through training programmes adopting new approaches and novel methods.

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