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Educating sustainable development (ESD) in the context of public management. Conceptual considerations for the design of a collaborative educational format for local sustainability

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Seamless Learning – lebenslanges, durchgängiges Lernen ermöglichen

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Educating Sustainable Development (ESD) in the Context of Public Management

Conceptual Considerations for the Design of a Collaborative Educational Format for Local Sustainability

Abstract

This article describes the conception of an open workshop format (blended learning) set up by municipalities that do not only act as internal providers of qualification for their employees. In collaboration with science, business, and civil society, the local implementation of the sustainability goals of the Agenda 2030 and the German Sustainability Strategy as well as the impact relationships of individual measures with a view to achieving the goals should be perceptible in the sense of seamless learning. For this purpose, the actors collect data to make the urgency of further intensifications or the impact of each actor's actions transparent to each other via virtual dashboard applications.

1. Requirements for education sustainable development

The dynamic development of social requirements in public spaces requires dealing holistically with sustainability. To use so-called 'swarm intelligence', agile networks with different actors from research, business, and civil society are available to provide 'smart solutions' for integrated sustainability through the use of information and communication technologies (see Bearing Point, 2015).

In order to activate continuous formal and informal learning, supported by the use of technologies, coherent didactic formats that support the content as well as methodical requirements and learning scenarios on the basis of practical contexts are demanded. As the empirical evaluation of Dehne shows, online-based collaboration projects support an open educational practice necessary for these goals, mainly in the case of conceived digital teaching-learning scenarios, which are only used in isolated projects (Dehne et al., 2017). This is the only way to establish the necessary transfer according to the objective of the concepts of Seamless Learning (see Rehatschek et al., 2016).

Particularly the public and non-profit sector should set an example developing concepts at community level that is tangible to people, in order to transform digital transformation into the goals of sustainable European regions through examples from the energy sector, building, and traffic management, but also social interaction and participation.

This requires a targeted acquisition of competence in systemic thinking of employees of different levels of responsibility, in order to enable the recognition of op-

timization of potentials as well as sustainability criteria in everyday work processes. Digital tools and dashboards seem to be tools used as means of transparency of the burdens on the climate balance in the course of the provision of services in public spaces. Since the 2000s, digital transformation has been gaining ground not only in working and economic life, but also in the didactic design of higher education and further education. Digital teaching is linked to the flexibility and individualization of the learning and teaching offered, which makes digital learning scenarios attractive, particularly on the mostly in-service continuing qualification market (see Handtke, 2015). A combination of online and classroom formats (blended learning) is particularly promising after ensuring the organizational structures, the learning phase can be freely chosen and at the same time a learning progress control with feedback can be ensured. In this respect, it is widely recognized in science that, as a result of the use of digital teaching formats, there is an opportunity to increase the opportunities of strengthening the orientation of learners (see further: Means et al., 2010). In the higher education landscape in Germany and around the world, the mission models also include the goal of serving society (so-called ‘Third Mission’), according to which research and teaching must be manifested on socially beneficial and public interest-oriented criteria (see Berthold et al., 2009). In addition, the link between universities and professional continuing training in the context of work processes has already been classified as promising for some years now due to installed executive training programmes in often part-time forms or certificate offerings (see Thies et al., 2015).

2. ‘Smart University’ as a conceptual link

A basic idea to fulfil the social mission of the ‘Third Mission’ derives from the concept of the Smart City in the municipal sector: the ‘Smart University’. Here too, the starting point is to use technology to provide value at different levels of demand coverage in the public service mission. This aims at making the basic concept of services more accessible to the target group via online services. In addition, issues to strengthen civil society will be addressed and transferred into projects through the participation of various agents. In the case of universities, the approach of service learning is an appropriate way of combining theoretical content through a project actually carried out in practice (public interest) in order to create an increase in experience. At the same time, the use of technology is intended to reduce resource consumption, and thus ecological pollutant emissions, and to provide the possibility of improved decision-making through intelligent data analysis and data provision (open data).

As the University Forum digitization points out, cities in the development of new SmartCity projects often work with different models of civic participation, such as (digitally supported) collaborative formats, e.g. idea contests or hackathons. Such forms of events translate the concept of ‘Smart University’ into higher education processes to offer their students better services, to design new opportunities for participation, to use resources more sustainably and to create new opportunities in research (Hochschulforum Digitalisierung, 2018). In addition, the agile approach is also found

in the openness of competence development, i.e. the possibility of an informal learning and participation format for different target groups and the provision of expertise without direct consideration.¹

In this respect, the step is obvious to approach the topic in a strategic way, even in the planned qualification concept 'BNEkommunal'. In this respect, the 'Smart City Charter' is used for the digital and sustainable transformation of cities, counties, and communities in order to meet resource-saving solutions to the central challenges of future-oriented and responsible urban development through intermunicipal cooperation.

The Smart City Charter is a guideline for action in terms of German urban development policy, the EU Urban Agenda (Amsterdam Pact) and the United Nations New Urban Agenda. This also supports targets of the implementation of the German Sustainability Strategy, which in turn serve the sustainability goals of the United Nations 2030 Agenda (Sustainable Development Goals).

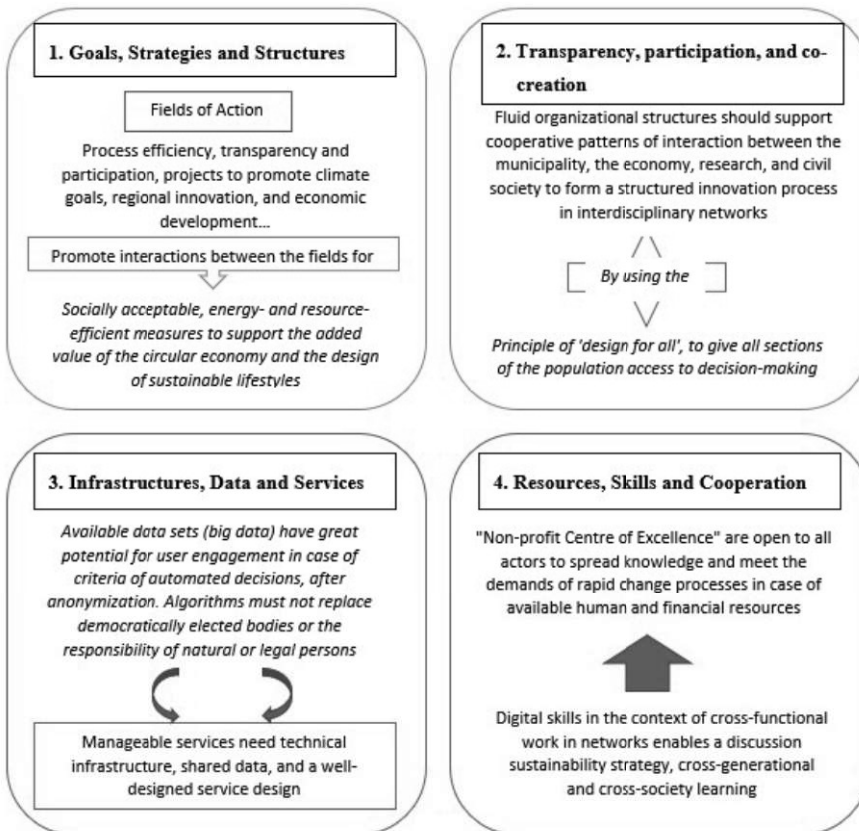


Figure 1: Focus-points of the Charter

¹ Further aspects of the agile working world, including explanations about new work, agile methods, and the agile mindset, can be found in Sauter, Sauter & Wolfig, 2018.

The content orientation of the seminar concept is thus largely determined by the guidelines of digital transformation provided for in the Smart City Charter, which are to be presented below as a focus in order to reduce the guidelines set out in Chapter 4 to give the rough concept of the continuing qualification measure a thematically introduction.

To meet the dynamic developments of modern society, digitization offers the opportunity to provide information for the purposes of political discourse and the involvement of research and civil society agents wherever they are located and bring this in actively in a prepared form for planning and decision-making processes.

3. Didactic reflections on digital education

Digital education is also a response to current societal needs, as the generation of the so-called 'digital natives' due to their increasingly dynamic behavior of information gathering and processing, a learning offer 'on demand' is expected. This 'pull principle', due to the easy divisibility of content, is supplemented in virtual space by the 'push principle' by pointing out relevant information.²

However, an event focused on 'learning outcomes' requires the recognition of a common responsibility of learners and teachers in the design of the learning process.³ Examples to increase the activation rate of presence methods, such as joint task processing using the 'Think Pair Share' method (see further: Martin, 2000) or the 'peer-instruction' method for creating a learning space for difficulties in understanding (see Mazur, 2006), can be supported using digital formats. Statistically evaluable partial examination services help to make learning success or progress by area of competence visually tangible (so-called 'Learning Analytics').

Dynamic progress is characteristic for the technological possibilities for the interactive design of teaching-learning relationships. Trends of interactive media use, in the sense of seamless learning, also assume research and the learning-promoting integration of current media formats. Various trend studies have been established, such as the Horizon Report, the Gartner Hype Cycle for Education, or the EDUCAUSE Higher Education's Top 10 Strategic Technologies.

The added value of these studies lies in the recording of current technology trends, which have a high probability of nationwide establishment in the coming five years and can therefore be included into the didactic considerations at an early stage. In the past, formats such as open online courses for masses (MOOCs), open educational resources (OER), or AI-supported human-machine interaction could be identified.

In addition, educational policy decisions and discussion content are indicated at an early stage, which in turn can have an impact on the framework conditions of teaching. This, in turn, addresses the Smart University's approach described above, which

2 Here, reference should be made to the critical examination of digitization projects in connection with the discussion about the media usage behavior of the so-called 'digital natives' (Prensky, 2001); for further details see Schulmeister, 2012.

3 In addition, the recommendations on digitisation in higher education (Decision of the Kultusministerkonferenz from 14.03.2019).

aims to promote ‘smart media use’ as a practical outflow of diverse teaching/learning arrangements as broad as possible at various higher education institutions. In order to compare such analysis to empirical surveys of the actual teaching practice of the base, the qualitative survey on media-based teaching at the University of Applied Sciences Düsseldorf can be cited. The study found out that among 56 teachers, the majority of the applied higher education is digital learning elements that are already an integral part of the Bachelor’s program and, in some cases, also in the Master’s program.

Without claiming representativeness, the example shows the diversity of the methods the teachers provided for the strengthening of interaction in the following graphic (multiple nomination possible, n=47), which derives from the willingness of the informal exchange in so-called ‘Communities of Practice (CoP)’ (See further Wenger, 1998) developed as a building block of informal acquisition of competence by lecturers. Such formats can create access and openness to implement the sustainability aspects of a ‘Smart University’.

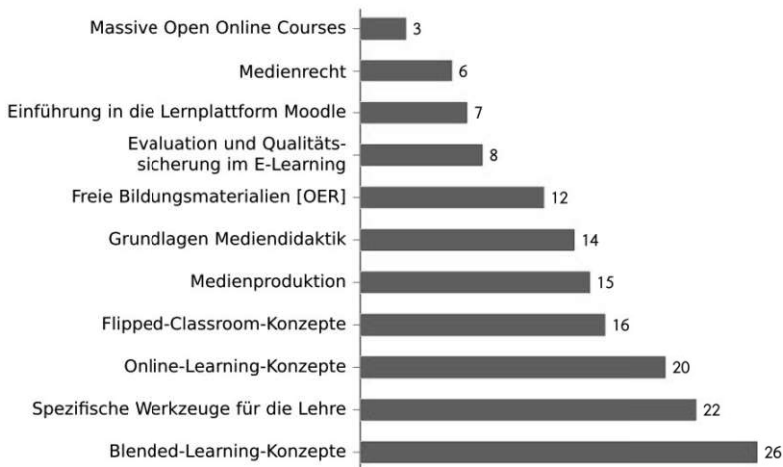


Figure 2: Interests in digital learning opportunities

As the example of the so-called MOOCs (Massive Open Online Courses) shows in comparison, meta-studies do not always give priority to the most important instruments of teaching practice. In the context of smart sustainability education, the basic idea of collaborative learning progress through interconnected learning groups is of increased importance, which is why the University Rectors’ Conference (HRK) also intensively discussed this.⁴

In the case of ESD, a first subdivision should include both the collaborative knowledge-based model, the so-called ‘connectivist MOOC (cMOOC)’, as well as the instruction-related variation ‘xMOOCs’:

4 In the case of ESD, a first course subdivision should use both the collaborative knowledge generation model, the so-called ‘connectivist MOOC (cMOOC)’ and the instruction-related variant ‘xMOOCs’. See also the decision of the 127. Senats der HRK Bonn, 24. Juni 2014.



Figure 3: cMOOCs and xMOOCs

In this respect, experience-based formats dealing with linking real-data-supported OPEN data analysis, insofar as an acceptable degree of anonymization can be ensured in order to safeguard the claims under GDPR, are getting increasingly important in order to develop learning spirals based on practical USE cases. The intended effects of 'smart teaching concepts' arise in an innovative context when the interaction of practical methods such as user stories, prototyping, etc. together with the best-practice success factors of smart government makes a contribution to research learning for sustainable development (see Reinmann, 2016).

4. Rough concept of the design of 'BNEkommunal'

Now that the contextual framework presented in chapter 2 has been described and the diversity of didactic possibilities referred to in the previous chapter have been shown, this section will present the outline of the planned education program 'BNEkommunal'. This is understood as a collaborative workshop format for the education and development of ideas to achieve sustainability goals with a regional character; the municipalities coordinate the social agents following their own project ideas. Based on standards on sustainability management systems, ideas about standards for ecologically and socially acceptable resource conservation exist in first-typical cross-sectional processes such as recruitment, onboarding, IT procurement, etc. These should then be established in practice in business, authority, university, or non-profit associations or NGOs.⁵

The implementation of education for sustainable development in higher education includes, for example, the implementation of the national action plan ESD in various fields of action. The central field of action lies in the development of competences in ESD matters for politics, civil society, and administration through cross-coordinated qualification measures and attention to the success factors for 'smart government' (see

⁵ The format can also be integrated via innovation circles such as 'Kommunen for future – Wandel vor Ort gestalten' by discussing and developing scope for action and solutions for sustainable and forward-looking municipal development.

field of action II BMBF, 2017 and success factors for Smart Government, for example after McKinsey & Bitkom, 2018).

In addition, the provision of teaching/learning arrangements for measuring sustainability through networking and cooperation of competent providers or the field of action V (Developing Transformative Narratives for ESD) in field of action III (different BNI paths) are essential by giving orientation to current social issues with a deeper meaning through research and teaching in social responsibility (see BMBF, 2017).

In order to clarify the content-system related connection, two examples of systems for the construction and quality assurance of sustainability management, based on ISO 26000, have to be described in an overview, in order to present a Plant-Profile of the educational program.

4.1 The standard 'ZNU-Sustainable Economics'

The standard developed by the Center for Sustainable Corporate Governance (ZNU) as an application-oriented research institute of the Faculty of Economics at the University of Witten/Herdecke makes it possible to examine existing projects and activities in the company with regard to the impact in the fields of environment, economy, and social affairs.

The approach model developed with business, academia, and certification agencies aims at establishing a transparent culture of dialogue by setting a variety of targets (e.g. the 17 SDGs of the 2030 Agenda including the 169 sub-objectives, ISO 26000, ISO 14001, ISO 50001, GRI standards and others), user-friendly for corporate or organizational practice. The categories of sustainable corporate management in thinking, acting, communicating, and measuring the provision of services are evaluated according to the three fields of action. In this respect, the cycle of target definition, implementation of measures, impact analysis, and countermeasure can be implemented in classes of all sizes in enterprises and organizations.

4.2 The standard 'EMASplus'

Based on the recognized European EMAS (Eco Management and Audit Scheme) system, which mainly acts as an environmental audit, 'EMASplus' extends the approach of an integrative and holistic management system, extended to include social and economic aspects of action. The standard, established in a cyclical improvement process, is open/free and relies on the implementation of a sustainability-oriented corporate mission statement through continuous sustainability auditing of performance creation processes. By adapting the process with regard to sustainability aspects, audits with certifications, based on ISO 26000 as system accreditations, are to be carried out on the basis of reports and training measures. Due to the guaranteed quality requirements, the standard is supported, among others, by the environmental expert committee at the Federal Ministry for the Environment (UGA).

Due to standardized requirements in the field of environmental protection of companies as well as the ethical principles of action in accordance with the CSR (Corporate Social Responsibility) approach, social and environmental aspects of the inner-organizational working conditions are managed. In addition, the development of innovative solutions from a non-profit point of view should be of greater importance in all sectors and company sizes.

4.3 Profile 'BNEkommunal'

In line with the presentation of the standards on sustainability/CSR management systems, the following workshop format will lead to initiatives and ideas in the smart improvement of sustainability aspects, which will also be exchanged, discussed, and interpreted between the municipality, business, science, and civil society via open data in form of dashboard applications, as well as they are subject in a long-term analysis in order to make the effects dynamically visible in real time. The workshop format is described as follows:

Target audience

The workshop aims at managers and project leaders from business, science, municipalities, non-profit institutions, and interested civil society. The duration of the workshop is scheduled for 1.5 days of presence and one day of virtual simulation and can be flexibly adapted to different group sizes.

Benefits

- Municipalities, business, research, and civil society co-create charitable projects that contribute to strengthening the local economy and civil society commitment.
- Designing new solutions for mobility, infrastructure, or resource efficiency through approaches such as 'citizen sensing', 'sharing', or 'crowd mapping' with the input of own needs for the further development of the legal framework.
- Implementing own project ideas with funding and get to know financing and operator models with the public authorities (Public-Private-Partnerships)
- Establishing a more open innovation culture in favor of digital transformation in the sense of sustainable integrated regional development.
- Cross-comparison of own sustainability initiatives with further good practice examples including evaluation of own projects and impact analysis.
- Open data opens up the opportunity of greater participation, transparency and can provide impetus for new business models and innovations.
- Get to know methodological formats such as open experimental rooms and real labs, hackathons, idea competitions, or think tanks.

Content

- German and international sustainability goals for the life cycle assessment and the carbon footprint (DIN EN ISO 14040/14044) as well as implementation deadlines and trends
- Application-oriented presentation of management instruments with sustainability orientation as a central control focus
- Best practice examples in cross-sectional processes with exchange of experience on possibilities of adaptation
- Exchange platform with own approaches and strategies in economic, social, and environmental aspects
- Network and technical infrastructure for processing collected data from sustainability management with integrated monitoring
- Sustainable personnel development in which collaborative networks ensure informal competence acquisition concerning sustainability aspects, systemic thinking, and project management

Progress in Learning

In order to obtain a certificate of participation in 'BNEkommunal' sustainability manager, a project thesis of approx. 7500 words on the practical establishment of a sustainability management system is required.

Paedagogic Concept

In accordance with the explanations on blended learning formats, a corporate/organizational experimental game is carried out as a simulation of sustainable decisions in the co-creative format with social agents. The focus is on strategies to achieve higher levels of achievement of one's own measures, taking into account the impact of the sustainability goals as well as their analysis and indicator formation.

In the MOOC virtual units, strategy adjustments are simulated using different scenarios in an impact network.⁶ The results of the simulation will be discussed with the participants on basis of suitable alternatives for action in order to understand the system of sustainability with regard to the German sustainability strategy. At the same time, a change of roles between the various agents is intended to generate an understanding of the concerns of the region, the company, etc. Situational communication and publication strategies of the measures form the conclusion.

5. Conclusion

In order to create local innovation spaces for the design of effective and efficient sustainability, an educational offer is needed, which provides a cooperative and application-oriented analysis of the local value creation processes from business, science, the municipality and civil society with regard to the effects of the climate balance and carbon footprint. In this respect, municipalities cannot only offer internal training for their employees as coordinating institutions, but they can also act as a non-profit or-

ganization for intelligent networking. Regional alliances are available for smaller municipalities, aiming at building up appropriate competences more quickly and to create synergy effects with other regional agents. It seems important here to make the use of dynamic, media-supported learning settings from the point of view of critical evaluation with regard to the added value in didactic design, in order to make the collaborative learning effects comprehensible for the practical partners. In this respect, a continuous further development of the use of methods is sought through best practice approaches.

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