

SHARING KNOWLEDGE FOR A SUSTAINABLE FUTURE

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Abstract—The issue of sustainable development is increasingly present among the concerns of the international academic community. The role that universities have in modeling the future generations towards sustainable societies is no longer questionable. This paper presents the importance of knowledge sharing between universities and academic staff and highlights the role of education for shaping a more sustainable society. The paper also introduces an info platform, based on Web 2.0 technologies, designed to help academics to collaborate and share best practices related to sustainability education. The proposed platform provides not only a framework for academic collaboration but also a support for lecturers who wish to engage in the process of transition towards a more sustainable society.

Keywords—knowledge sharing, sustainability education, sustainability info platform, web 2.0 technologies

I. INTRODUCTION

A. Climate Change

CLIMATE Change affects both the environment and human beings. The strategies to mitigate this phenomenon and to adapt to its consequences also impact on the natural and built environment and on populations, be it through the implementation of wind farms, the adoption of a fuel tax or incentive measures for sustainable construction.

While global in its nature, climate change has differentiated impacts at the local level, thus requiring a wide array of solutions to respond to the particularities of each situation. In many ways, climate change represents an obstacle to sustainable development but it can also represent the opportunity to rethink consumption and production patterns, to imagine alternatives to non-renewable sources of energy and to develop new technologies [1].

Among other observer organizations, research and academic institutions are obviously also very concerned by the negotiation process, the problems that are raised and the solutions advocated or adopted. Not only do they play a crucial role in conducting research on the climate system and on the social, political and economic aspects of climate change, but universities increasingly position

themselves as places to both raise awareness of sustainability issues and to improve environmental performance through the implementation of green campuses.

B. The Actual Context

In the 1960's environmental degradation along with the rapid economic growth alarmed many people. They became aware that unilateral pursuit to economic growth can bring humanity not only economic wealth, but also calamity that could ruin the Earth. So, economic development, as opposed to growth, was put forward.

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992 during the Rio Conference. It represents the basis for a global response to climate change. It was expanded in 1997 with the creation of the Kyoto Protocol, that sets binding targets for industrialized countries to reduce greenhouse gas emissions by 2012. The future of the Kyoto Protocol was the purpose of the 15th Conference of Parties held in Copenhagen in December 2009 (COP15), denounced as a failure by non-governmental organizations (NGOs), media, as well as many states. [1].

Sustainable development requires a broad international cooperation and the international community will have the opportunity to contribute effectively to this Plan, together with local communities so that the beauties and riches of the earth can be enjoyed both by the present and future generations

II. THE ROLE OF EDUCATION IN SHAPING THE SOCIETY

Education is the most effective means available to a society to meet the challenges of the future, sustainable development being one of the interesting and necessary challenges [2]. Progress increasingly depends on more than research ability, innovation, and adaptation to new generations. Access to education is a sine qua non requirement of youth participation in socio-economic and cultural life at all levels of society.

Obviously, education does not entirely resolve contemporary issues but should be part of the effort to create new relationships between society members and to generate an increased respect for the needs of

environmental protection [3].

The United Nations declared the period: 2005-2014 The decade of education for sustainable development, arguing that education for a sustainable society "enables people to acquire knowledge, values and skills to participate in decisions that will improve lives currently, without destroying the planet in the future" [4].

Education is not confined to academic instruction, i.e. its formal aspects. It includes non-formal and informal sides, without neglecting the role of family and local community. The vast community of educators is a very important human resource but is not used for the needs of sustainable development and whose contribution can be valuable in all local communities.

Education is one of the key mechanisms through which we become human beings that act and interact on the basis of a common culture and one of the key 'producers' of culture and the way we see reality. It is, at the same time, and because of that a vital condition for realizing sustainable development [5].

In an essay entitled "The Role of Higher Education in Achieving a Sustainable Society", Tony Cortese said that "... [higher education] has the unique freedom to develop new ideas to analyze society and to engage in bold experimentation and to help create new knowledge" [6] (p 5).

Universities in particular are designed to develop students to their so-called dynamic qualities allowing them to analyze, build and operate with a high degree of autonomy and self-determination, if not in their personal lives, at least in working life. At the same time, universities should develop for their students, skills that will allow them to handle uncertain situations, and vaguely defined, with norms, values, interests and conflicting, or at least divergent situations of reality.

Despite the questions we have regarding "sustainability" as an organizational structure of higher education, we see a great educational potential that can and should be valued by higher education institutions (Fig. 1).



Fig. 1. Impact of universities in sustainable development (by Cornell University)

What if higher education was to take the lead, as it did in the race for space or in the fight against cancer, to prepare students and provide information and knowledge to develop a just and sustainable society?

III. KNOWLEDGE SHARING IN A KNOWLEDGE BASED SOCIETY

A. Theoretic Approaches of Knowledge Sharing

Organizational knowledge has been recognized as a valuable intangible resource that holds the key to competitive advantage [7]. However, Spender and Grant [8] noted that despite recent interest in organizationally embedded knowledge, little progress has been made "in understanding its anatomy and creation", (p. 6). Researchers have argued that since individuals are the prime movers of knowledge creation in an organization, knowledge sharing among individuals could assist in knowledge creation at a collective level [7], [9]. Senge [10] proposed that organizational knowledge is created through communication of individual learning among co-workers. Similarly, Nahapiet and Ghoshal [11] postulated

that organizational knowledge is created as a result of the combination and exchange of existing knowledge among employees. Thus, given the importance of knowledge sharing, scholars and practitioners would be interested in identifying tools that enhance knowledge sharing within the organization [12].

Knowledge sharing is something else than but related to communication. It is also different from but related to information distribution. In a strict sense, knowledge cannot be shared. Knowledge is not like a commodity that can be passed around freely, it is tied to a knowing subject. To learn something from someone else, i.e. to share his or her knowledge, an act of reconstruction is needed. It takes knowledge to acquire knowledge and, therefore, to share knowledge [13]. Knowledge sharing presumes a relation between at least two parties, one that possesses knowledge and the other that acquires knowledge. The first party should communicate its knowledge, consciously and willingly or not, in some form or other (either by acts, by speech, or in writing, etc.). The other party should be able to perceive these expressions of knowledge, and make sense of them - by

imitating the acts, by listening, by reading the book, etc. [13].

B. Perceived Benefits and Costs of Knowledge Sharing

Perceived benefits/costs have been one of the most studied antecedents of knowledge sharing. Social exchange theory suggests that individuals evaluate the perceived ratio of benefits to costs and base their action decisions on the expectation that it will lead to rewards such as respect, reputation, and tangible incentives. Participating in knowledge sharing in an online community of practice has been found to be related to increased internal satisfaction, perceived obligation to reciprocate the knowledge gains from the forum, enhanced professional reputations, and helping advance the community [7], [14]. Bordia and his collaborators [15] found a positive influence of benefits on knowledge sharing only for technology-aided sharing but not in a face-to-face context. In general, prior research seems to suggest that knowledge sharing is more strongly related to employees' beliefs that their shared knowledge is useful to others than the personal benefits they gain, especially in a professional network.

IV. SHARING KNOWLEDGE USING WEB 2.0 TECHNOLOGIES

According to Stephen Sterling [16], “‘new ways of learning’ need to be transformational and they need to be planned, supported and integrated into all existing educational institutions, if we are to meet our obligations to our children and future societies.” Velazquez et al. [17] emphasize that “adequate conditions for the successful implementation of sustainability programmes do not exist”. However scholars are increasingly concerned with methods of overcoming these barriers.

Kaivola, Kärpijoki and Saarikko [18] explain that “based on feedback from university pedagogy courses and degree programme revisions, university lecturers attach great importance to the peer support that they get through courses, be it face-to-face or in a web environment. Long-term development work creates partnerships and peer networks thanks to which teachers are more willing to develop and analyze their own working methods.”

Based on the presented literature review, our suggestion to overcome the barriers for implementing sustainability into teaching practice is a tool based on the Web 2.0 technologies. Explicitly, a website for disseminating information and best practice and problems sharing, addressed mainly to the teaching community of the universities, but also to the students could ease the transition towards sustainability education.

Web 2.0 concepts have led to the development and evolution of web-based communities, hosted services and applications, such as social networking sites, records sharing sites, wikis, blogs and folksonomies. Users can

own information on a Web 2.0 site and exercise control over that information. These sites may have an “architecture of participation” that encourages users to add value to applications while using them. Web 2.0 tools enable users to produce content, to share it with others, better interaction, socialization of information, syndication, increased usability [19].

By sharing ideas, concepts, tools, experiences learned in different contexts, it is anticipated that we will all learn many things that will help us to help our academic communities and companies to develop the skills to make progress towards sustainable development.

V. THE SUSTAINABILITY PORTAL – A PROPOSED SOLUTION FOR THE TRANSITION TOWARDS ESD

The literature suggests that a website based on Web 2.0 technologies can ease the transition towards education for sustainable development, as one of the main barriers in this transition process is that lecturers are not aware of the sustainability concept, neither of its importance or the pedagogical approaches of these issues. For this purpose we have developed such a portal, using the CMS Joomla! 1.5.23 (see Fig. 2).



Fig. 2 The Sustainability Portal

The Sustainability portal is addressed mainly to the academic staff, but also students and anyone else who is interested in learning more about sustainability can access it.

This site is meant to be an information tool for the teachers concerned with sustainability education. In order to engage oneself in a transition towards sustainability education, information is essential. This is why the portal is intended to be a one-stop-shop for the sustainability education issues, where information about sustainability,

sustainability education and the sustainable university is provided.

Some articles have attached documents, which contain more detailed information. These documents can be accessed by the registered visitors, who can download the articles for further reading. Visitors of this website have the possibility to leave comments to the articles and rate them using a five star rating system.

The platform also hosts a discussion forum, where visitors can share best practices or ask for solutions for the problems that they are confronting with. This interaction between users can lead to collaboration in order to achieve interdisciplinary sustainability education practices.

VI. CONCLUSIONS

In response to increasing concerns of society about environmental degradation and increasing demands for a transition to a more sustainable society, higher education institutions worldwide have begun to change their missions and educational practices and approaches to include sustainability. Because this happened in the past decade, the role of higher education in the social context of an ongoing transition to greater sustainability has become a topic of significant scientific importance [19].

In order to effectively contribute to driving environmental and sustainability improvements in their (future) workplaces, learners (students) need to acquire knowledge, understanding skills and experience in identifying opportunities for improvements and designing effective strategies for realizing them [20]. Due to organizational cultures of universities and natural human resistance to change, a series of barriers occur in the process of transition towards sustainability interdisciplinary teaching. Barriers such as lack of awareness, lack of information or resources for the teachers in order to engage in teaching sustainability could be overcome by the proposed instrument - a website).

VII. REFERENCES

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