ICTs as Innovative Learning Platforms
– the Experience of the Virtualis

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Abstract

Social issues and stakeholders participation have become key issues in environmental debates focused on the operationalisation of sustainability. Related to these, concerns about which institutional platforms can be developed in order to make these participatory processes happen, as well as how to value various stakeholders’ participation, have been the object of numerous research projects.

In this paper, we explain how such research has progressively lead us to examine why and how various types of Information and Communication Technologies could constitute a very useful set of learning tools for improving citizens' awareness of environmental management as well as for improving their participation in the policy-making process.

1. Introduction

Virtualis is a 2year and a half research project funded by the European Commission under the Information Society Technologies (IST) Programme – Key Action 1: Systems and services for the citizen. Its full title is ‘Social learning on enVIRONmental issues with inTeractive information and commUnicAtion tecnhoLogIeS’. The team is ‘divided’ between institutions that seem to be more specialised in various types of ‘learning’ and those whose role is focused on actually developing ICTs prototypes.

Our objective is to learn from each other by jointly developing four types of ICT prototypes that aim to:
- improve environmental awareness of various types of stakeholders;
- allow them to understand better the impacts of their actions on the environment (positive and negative) - and change them as a consequence;
- allow them to interact and express their views and knowledge on environmental issues and best practices.

These prototypes can be classified as ‘multi-player games’ (A), ‘virtual reality tools’ (B), ‘personal barometer’ (C) and ‘scenario builders’ (D). Some of these tools are focused on individual impacts and understanding of what is happening (e.g. C) while some others extrapolate the issues to the macro level (e.g. A).

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In this paper, we will present the main points of the literature and web review we carried out in Working Package 1 on ‘ICTs, citizens and the environment’. We discovered that, although more and more is done to use ICT tools that could help empowering citizens and improve environmental situations, often, one of the three elements (ICTs or Citizens or the Environment) is missing in the ‘combination’. What the virtualis project seeks to achieve is to ensure that the prototypes we develop DO link the three dimensions and put a strong emphasis on the empowerment and participation of non-experts as well as on the social learning that can result from it.

2. ICTs, capacity building, participation and social learning

One of the most remarkable outcomes of debates on sustainability, out of the last twenty years, might well have been the emergence of notions such as capacity building and participatory processes. After having focused for long on environmental sustainability and how economic activities impact upon it, we are now understanding better the crucial importance of the social dimension of sustainability. Notions such as capacity building and participation help us in integrating the various dimensions of the concept. They are also opening up debates on potentially controversial issues such as the following:

- The notion of ‘experts’ is now being questioned and the views of local communities are now better valued and integrated in the analysis of environmental projects.
- Conflicting views on what sustainability means in practice and on potential environmental initiatives are no longer perceived as negative. Rather, mapping these views and formulating ways to build trade-offs can help identify better what sustainability can mean for a variety of stakeholders in practice.
- Exchanges of practical knowledge between various stakeholders (e.g. about best practices) is also valued and viewed as a necessary complement to more theoretical principles concerning sustainability.
- Allowing and encouraging everybody to take part in environmental debates that include non-experts proves to not only considerably improve environmental awareness, but also to empower a variety of stakeholders who are hence more motivated to get involved in environmental actions.

In practice, one comes across terms such as participation in the context of environmental NGOs’ discourse, more than in the context of environmental education. This seems paradoxical since the key points highlighted above are very much related to new types of learning. Debates on how to operationalise sustainability are progressively highlighting the need for learning environments to extend beyond traditional educational systems. Similarly, learning platforms and tools have to address and empower new communities of learners, in new ways, if ‘environmental education’ is to help implement capacity building and sustainability in the near future.
The type of ‘learning’ we are therefore interested in can be described as ‘social learning’. It has been defined as follows: *It is an approach and a philosophy which focuses on participatory processes of social change. The concept of social learning has recently entered the discourse on issues related to the environment and development* (Korten and Klauss, 1984; Milbrath, 1989; Weale, 1992). It encompasses a positive belief in the potential for social transformation based on:

- critical self reflection
- the development of participatory multi-layered democratic processes
- the reflexive capabilities of human individuals and societies and
- the capacity for social movements to improve political and economic frameworks.

In Virtualis, we focused on four dimensions of social learning:

1) Social learning and *interactions amongst various stakeholders* as well as *between citizens and their environment*. The framework for social learning has to address the interactions of stakeholders at different levels with other humans and with ecosystems. Social learning creates space for multiple visions and perspectives, creativity and energy and allows participation in a continuing collective process.

2) Social learning reflects the *link between understanding and action*, i.e. the continuous development of both knowledge and the ability to use it. In the context of environmental debates, there is therefore potentially a strong parallel between *social learning and environmental decision-making processes*.

3) Learning about environmental issues involves the *confrontation between a variety of objectives, interests and constraints* that are also expressed in a variety of vocabularies and at different scales by different types of stakeholders. The governance of natural resources for sustainability requires processes of *arbitrage and de-liberation* that social learning platform can potentially provide. This implies that stakeholders of various backgrounds can learn from each other in the context of social learning/conflict resolution platforms.

4) *Engaging non-experts*: More and more, the ‘expert culture’ is being criticised: for long, the values, beliefs and knowledge of lay people in society have been devalued. As a consequence, citizens, expecting problems to be solved by specialised agencies, have been disempowered from taking action and have disengaged politically. Virtualis seeks to broaden/ improve the construction of knowledge and action.

3. The framework for social learning

The *institutional dimension* of social learning is crucial. Woodhill (1998) described social learning as ‘a process by which society democratically adapts its core institutions to cope with social changes in ways that will optimise the collective well being of current and future generations’. The debates related to social learning are, therefore, very close to that on sustainability and they do face the same constraints: how
can communication and participatory processes be improved if the existing institutional set up does not help them to actually take place. In some countries (most of them, one could argue), reforming institutions takes much time and can encounter numerous obstacles, including of a political nature. In this context, ICTs can come to our rescue since they constitute a ‘platform’ that is somehow more open and transparent. The World Wide Web constitutes a massive network of stakeholders, of actions, of partnerships, of information. If the access is provided to all stakeholders then communication can take place without being restrained by various institutional settings and rigidities.

ICTs therefore seem to be particularly promising and have even been described as ‘enablers of social learning’ because they can create a learning environment by providing support for the learner in constructing knowledge and deriving meaning. ICTs open up new perspectives within which quantitative and qualitative information can be solicited and the reciprocal movement of information can promote both instrumental and non instrumental dimensions of social learning. ICTs and particularly the internet has thus opened up new avenues for civil and political activism sometimes called ‘cyberactivism’.

The policy implications of using ICTs in this context can then be described as follows. On the supply side, there is a role for policy in encouraging innovation that promises real substitutions of information for resource and mobility, and in setting ambitious long term targets for their widespread adoption. On the demand side, there is an important role for governments in shaping telecommunications and hard infrastructure that determine whether opportunities for radical improvements in resource productivity will arise from the diffusion of ICTs.

4. The Review (Virtualis Working Package 1)

In the process of undertaking our review, we made a special point of focusing on projects or web sites or prototypes that would link the three elements (ICTs, citizens and the environment). We carried out wide ranging searches from books, articles (on the potentials that new ICTs are offering); web sites describing various initiatives; prototypes (on CD Rom or the web) and policy texts on ICTs, social learning and the environment. The review was focused on a moving target and the first research document was therefore merely a starting point for our collective review. WP1 is now live on the virtualis web sites and research partners are invited to contribute with new web sites or prototypes they found that link ICTs, environment and citizens.

We examined which type of platform would enable and motivate stakeholders to learn from each other. Making representations accessible to a variety of stakeholders means establishing bridges between representations at different levels of aggregation or based on various conceptual frameworks. It also means building the capacity for
mutual understanding of the contrasting perspectives or preoccupations of stake-
holders, allowing them to identify, explore, argue about and debate the key scientific
and socio economic features of system behaviour and possible future directions in
order to perhaps search for common grounds.

From the literature and the ICTs reviews, we could safely conclude that the key
learning characteristics are as follows:
- Learning is more likely to take place in active rather than passive situations
- Learning involves several distinct modes of thinking
- Learning styles vary
- Learning is improved by integrated, interdisciplinary, systemic thinking

The following table provides a summary of some of the ICTs that were reviewed.

Table 1. A few examples of items reviewed in Virtualis WP1

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<th>Citizen Participation</th>
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<td>GeenNet (London) is geared to the needs of non-profit organisations, activists and people working for social change. It is a not for profit registered charity, dedicated to supporting and promoting groups and individuals working for the environment, peace and human rights via the use ICTs. This network offers support and training to all members whilst fulfilling its mission to provide low cost, effective communication. It is a low cost Internet gateway for environmental activists to communicate and network locally, nationally and globally.</td>
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<td>The UK, Cambridge based Web project ‘Flexibility’ aims to inform and stimulate debate about the changing world of work by brings together research and opinion about innovations in employment practice, organisational development, technological change and public policy; it addresses issues such as sustainability, ICT and the environment.</td>
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<td>KnowNet web site focuses on ‘ICT as a medium for restructuring the global knowledge divide’. It suggests that the global impact of this is the intertwining of the world economies, from which at the present time, the poor in developing countries tend to remain isolated in social, economic and, cultural terms.</td>
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<td>The research group at the JRC developed a computer stand-alone tool, named GAS, operable on any portable PC computer running Windows 95 or similar. The user interface is intuitive, allowing a playful, interactive exchange of information between the tool and the user. It is a ‘forum’ for reflection, discussions and social learning and facilitates the exploration of the issues and potential impacts of chosen energy-lifestyle futures. This tool allows the user(s) to explore routes to sustainability by playing with alternative lifestyles, exploring trade-offs of new choices - in other words, an interactive scenarios generator.</td>
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U316 is a 3rd level university environmental web course. It explores various environmental issues from an interdisciplinary perspective. Each issue focuses on themes such as complexity, sustainability, uncertainty, globalisation, environmental action and governance. The emphasis is put on the participation of stakeholders in environmental action, and on practical problem solving approaches. A variety of multimedia is used to enhance the learning journey.

**Ulysses**

Ulysses was undertaken as a metaphorical journey (a ‘voyage) that researchers and Venetian citizens made together. In this component, a number of small groups of local people met five times each. Three facilitators, including a computer model moderator, helped to guide the discussions, starting with animated presentations explaining the issues to be discussed and descriptions of the computer models to be used. Thus a considerable variety of communication forms and media were used. Hence, the ULYSSES in Venice ‘voyage’. Through the aid of portable and desktop personal computers, the ULYSSES-in-Venice group members were presented with various types of ‘integrated’ model dealing with aspects of climate change. The tool permitted an intuitive framing and quantitative response to ‘how does my lifestyle relate to the global problem’.

**SDNP**

The Sustainable Development Networking Programme (SDNP) is a catalytic initiative to kick-start networking in developing countries and help people share information and expertise relevant to sustainable development to better their lives. Launched in 12 pilot countries in 1992 as one outgrowth of the Earth Summit, the SDNP currently offers assistance in establishing connectivity to national networks and the Internet, content aggregation and user-training in 39 developing nations and 36 small island developing States (SIDSnet).

**IPA**

This is a web-site on the Indigenous People of Australia (IPA), the traditional owners of the land, which we call "Australia". It is a collection of links that attempt to provide essential information on a variety of Koori pertinent topics. It is evident that this site is not fully comprehensive in covering each and every aspect of the Indigenous People of Australia; however, it is probably the definitive non-governmental private citizen developed site. It also gives some indication of indigenous issues pertinent to Canadian native peoples.

5. **Recommendations**

Many other web sites and ICTs initiatives were reviewed during WP1 – this is a very small sample which might help you understand better what ICTs, citizens’ entitlements and the environment are about. We concluded that, when developing the virtualis ICTs prototypes, we needed to take the following into consideration:
Incentives for using ICTs focused on citizens and the environment: It is often said that the greater the uncertainty in the environment, the greater the need for learning. A variety of stakeholders are progressively understanding the fact that, in the context of environmental issues and debates, even though scientific expertise attempts to dominate the debates in an authoritative way, there is a lot of uncertainty and changes happening at different scales and speed. There is a growing need for social learning and participatory processes.

Highlighting the relevance and importance of ICTs in relation to citizens’ entitlement and environmental decision-making processes: The nature, objectives and characteristics of social learning ought to be highlighted explicitly in the presentation of the structure and raison d’etre of the ICT prototypes.

Incentives for developing ICTs, citizens and the environment: The size and focus of R&D budgets are likely to be a primary factor encouraging and constraining learning. Learning is a costly process, both in terms of funds and in terms of human engagement in the learning, monitoring and facilitating process. The design of ICTs has to be such that they can empower and value all citizens and their value systems and experiential knowledge.

Presenting ICTs, citizens and the environment in the context of institutional innovations: Social learning is stimulated by environmental changes but also by factors that are ‘internal’ to our societies or organisations. Thus, the structure of an organisation defines the way in which multiple complex learning processes can take place. At the level of the society, the type of existing institutions that are created might (or might not) encourage social learning to take place.

Ideological and paradigmic premises to the development of ICTs prototypes: Ensuring that the new types of ICTs we are developing can enable participation also implies that the design of these ICTs goes beyond disciplinary barriers. A systems approach to social learning in the context of environmental participation could help in the design of the prototypes as well as in ensuring that the participatory process is related to the policy arena, outside the ‘safe ICT platform’.

The design of the ICT platforms, in terms of structures and processes, needs to allow social learning to happen in the long run: For instance, pictographic iconology should be inherent within the ICT prototypes aimed at addressing the needs of indigenous peoples who do not base their learning on a language tradition. The structures must also be designed in view of making conflicting and heterogenous learning compatible, since these are core elements of social learning.

Social learning within the ICT designing team: We should be aware of the fact that we are constantly learning from each other within the team (made up of IT/VR technicians as well as non-technicians) and also from examining what is being done in terms of ICTs, citizens and the environment. New projects and web platforms are being developed on a regular basis and a review of these cannot be static. The learning emerging from such a review will occur through time.
Marketing and raising awareness on the existence of such ICTs: The Entity and Strategy that is to be used for the display, presentation and marketing of this product should be defined at an early date, in order to maximise the exposure and income generation possibilities.

International recognition and Quality Assurance: An International Reference Group should be established for evaluation purposes to ensure that the prototype is fit for use by a wide range of non-expert and expert users, this in a worldwide local and distance learning context.

We do hope that the creation of such prototypes will help in identifying the way in which environmental knowledge and responses (actions) can be collectively constructed. We also hope they will help answer questions such as ‘What type of information and knowledge do we need to make the transition to sustainability real, practical, and successful?’ – which is the most important objective of Virtualis.

Bibliography


