Special issue
Sustainable Learning and ICT towards
Sustainable Development:
Theories and Empirical Studies

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Gianvito D'Aprile

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Commentary: approaching sustainable learning on multiple levels

*Ola Erstad**

Introduction

The three studies presented in this special issue explore different approaches of how to engage people and organizations in core matters of sustainability. In recent years, sustainable learning has become a core area of importance for policy makers, organizations, public and private, and people in their everyday activities. Still the important challenge is to understand what sustainable learning imply and how to develop it.

The articles report from studies working towards sustainable development and social responsibility on different levels and within different contexts. They are all reporting on research within an Italian setting. As such, they represent important attempts of regaining personal and corporate empowerment in creating and supporting change that can be sustainable. A core issue is about the relationship between social responsibility, sustainability and learning. In this commentary, I will reflect on the contribution of each of the articles to

* Institute for Educational Research, University of Oslo.
Corresponding author: Ola Erstad – Institute for Educational Research, University of Oslo, Oslo, Norway. E-mail: ola.erstad@iped.uio.no

this field of research and comment on three issues of importance concerning innovation, sustainability and the role of ICT across the different studies.

Innovation and sustainability

The framing for all the three studies is the ongoing economic crisis in many European countries and the challenges this represents concerning development and ways of addressing future challenges, both for people, the education system and corporate organizations. Such a crisis can hinder real prospects for development because of lack of economic funds and investment in issues of sustainable development. It also has a devastating effect on people's lives with increased unemployment among young people and social instability. However, it can also trigger new solutions and innovative approaches. The important challenge is to find the right balance between innovation and sustainability.

The backdrop, that all the articles in this special issue refer to, are the concepts of sustainability and sustainable development from environmental issues and global challenges for our planet that has been addressed by international agencies and treaties during the beginning of the 1990s. In more recent years these terms have also transcended into many other social fields such as education and corporate organizations. A new understanding of social responsibility has become a key concern for ways of conceiving development and regaining confidence in social systems.

Such issues have also become more prevalent within research and theoretical approaches to innovation and development. For example, Michael Fullan (1991, 2012) has addressed issues of sustainability as part of his writings on educational change since the beginnings of the 1990s until the present. He focuses on the real complexity of dynamic and continuous change, showing the challenges this implies both on peoples' mind-sets and on mechanisms defining practices. This made the research community understand that change was not an event that occurred in such a way that a 'before' and 'after' could be recognised and measured, rather, he defined change as a process.

In recent years, this has been taken up by other researchers trying to develop models to study and to create interventions into practices and systems in order to work towards sustainable development. This represents a movement away from traditional models of change based on organizational theories as Senge or Nonaka and Takeuchi, towards models trying to grasp the complexity of change processes through the activities and people involved (Arnseth & Ludvigsen, 2006).

One important perspective for studying change processes in different domains of social life and in different organizations in recent years has been cultural-historic activity theory (CHAT) (Engeström, 1987). The focus of this perspective is on activity as the unit of analysis and mediation between actors and certain cultural tools. Yrjö Engeström has then expanded this model beyond the person and the tools by introducing a larger framework of factors that are part of developmental processes on different levels, such as rules and norms, division of labour and communities of practice. The relation between these factors is defined as an activity system and within an organization and between organizations there might be several activity systems that relate to each other in different ways.

In their article 'Models of Innovative Knowledge Communities and Three Metaphors of Learning' (2004) Paavola, Lipponen and Hakkarainen analyze and compare three models of innovative knowledge communities. The model of knowledge-creation from Nonaka and Takeuchi, the model of expansive learning from Engeström, and Bereiter and Scardamalia's model of knowledge building. Despite basic differences, Paavola, Lipponen and Hakkarainen show that these models have pertinent features in common. They all emphasize dynamic processes for transforming prevailing knowledge and practices. The authors argue for a knowledge creation metaphor that focuses on investigating mediated processes of knowledge creation that have become especially important in a knowledge society.

These approaches are examples of how issues of change and sustainable development has been addressed in recent years as a framework for what Scardamalia and Bereiter describe as 'building cultural capacity for innovation'. The three articles in this special issue

might be said to contribute in further developments within this field, both theoretically and methodologically. I will now turn to my readings of key aspects highlighted by these authors.

Ways of engaging children's attitudes

In their article, Colombo, Danisi and Valenti present research that focus on how environmentally sustainable attitudes among children might be promoted. Their approach is to use creative thinking with narrative video-training as a way to promote such attitudes. The important aspect to this is about ways of raising awareness among people concerning the environment and personal engagement of great importance for one's own future. The term sustainable is here defined as 'behavior that is aware and attentive towards a specific natural resource within an eco-system'. Their reference is the United Nations decision to devote the years between 2005 and 2014 to promote an Education to Sustainable Development. Education then plays a key role in raising awareness among people. It is of special importance to engage young people in issues of the environment because they will be the responsible agents in our future societies. As such, Colombo, Danisi and Valenti define a very important agenda for their research.

The main contribution of this research is the focus on two specific tools for enhancing ecological attitudes among children, that of creativity and audiovisual technology. Creativity has become a key term in many international frameworks on 21st century skills and competencies emphasizing the importance of thinking about new solutions and ways of reflecting on one's own life. As discussed in this article creativity also relates to social responsibility and well being in everyday life.

Their contribution to this field of research is related to the model called WCR (Widening-Connecting-Reorganizing) developed by Antonietti, Colombo and Pizzingrilli (2011). This is an interesting model in the way it conceives creativity as resulting from three main skills: being able to broaden a perspective (Widening), to connect seemingly unconnected concepts (Connecting), to reorganize properties of a given

situation, changing the whole perspective (Reorganizing). This represent a novel way of working with children in creating a non-judgmental environment in which each child can express himself/herself freely.

The other aspect is the use of ICT as part of this process of raising awareness towards environmental issues among children. They build on other research and decide to use video clips. The use of video and different multimodal resources has become a dominant aspect in many educational settings, from MOOCs and Khan Academy to classroom activities, as ways of engaging learners in different ways. However, not much research exist focusing on children as target group, and it could have been interesting to know a bit more about the training videos themselves and its narrative.

The main aim is then to test out and assess the efficacy of a specific training, using creative thinking and ICT based videos to promote eco-friendly attitudes of primary school children. A pre- and post-test research design was used to test different items. The results from this study show that children in the experimental group gained a greater awareness on the issues of energy conservation, pollution and recycling. Similarly, concerning creative thinking the experimental group showed significant improvement on the three factors fluidity, flexibility and originality. Also, a qualitative part of the study analyzing spontaneous written narration the children provided at the end of the training, describing their experience, showed positive emotions elicited by the training clearly emerged by children's narration – as well as the acquired knowledge about specific environment-friendly attitudes. Children also showed a clear awareness of the importance of cooperation, and were able to use metacognitive strategies to reflect on their learning experience.

This research is important because it specifies both content and methods of how to engage people around important environmental issues and how training might support advancement in attitudes. It is also important in the way it focuses on children as a target group and the different tools that can be used to engage this target group. Combining creativity and new technologies seems very promising and has great potential for future research in this area.

Participation in socially responsible practices of organizations

The article by D'Aprile, Loperfido and Talò represent quite a different approach and target group on sustainable learning. Their aim is to validate a psychosocial model about sustainable learning as a process of participation in socially responsible practices of organizations, fostered by new technologies. The study focus on workers, employers and employees of small and medium size enterprises in Italy. Within these enterprises and organizations, learning sustainability is defined as a strategic lever toward sustainable development, which is important in order to sustain the competitive and long-term advantage of such enterprises.

Awareness about sustainability is of course not new in organizations. However, the article by D'Aprile, Loperfido and Talò has the aim to provide a new sustainable learning model applied to the organizations. A key challenge for many organizations is to move from addressing the topics of sustainability as such towards implementing and create conditions for organizations and workers to make this part of their everyday practices. In this way, this article is really important. In their theoretical explorations, they refer to the construct of Corporate Social Responsibility (CSR) as a framework where the phenomenon of sustainability can be highlighted. They then bring in the community of practice model from Wenger showing how organizations can generate shared practices and a common ground that inspire members to support their organizational commitment reflecting self-definitional aspects of organizational membership. This seems like a very promising since this theoretical approach represents a bridge to connect both social aspects and individual characteristics through the learning processes emphasizing participation within communities, and connected to issues of sustainability as part of this participation. What is interesting in this study is the orientation towards a knot of a network composed by several communities directly or indirectly interacting with one another and representing reciprocal stakeholders. Within each community, individuals interactively build their identity paths, learn to be sustainable and contribute to the shared definition of a system of

practices aimed at implementing sustainability. What makes the learning process a sustainable one is the nature of the practices, which are oriented to the social, economic and environmental dimensions, and, at the same time, support the increasing expression of the self-moving from the periphery to the center of the community. New technologies then become important tools in sustaining the formation of what they call 'sustainable communities of practices'.

In their study, they used a survey on a sample of workers employed in small and medium size enterprises. Based on the results from their study they argue that when business professionals participated in socially responsible practices, they were engaged in a system of learning activities, which enhance the organizational sense of community and the committed identity, thus facilitating in turn sustainable development. In addition, such a sustainable learning model was able to differentiate among workers using technological tools for sustainable activities. New technologies were important in fostering the corporate sustainable learning process emphasizing the importance of a digital social network.

Emphasizing cultural diversity in organizations

In the article by Manuti, Giancaspro and Campo, another important issue of sustainable learning within organizations is addressed. This concerns the role of employees' perception of the organizational cultural diversity management practices in developing awareness about sustainability. Many organizations operate on a multinational level with offices in different countries. This create new challenges in the way such organizations operate and have to consider cultural differences among employees. In this study, the focus is on a multinational health care company. The interest is on how employees perceived the initiatives brought about by the company to support diversity management and integrate their foreign newcomer colleagues. The sample of the focus group was 8 employees belonging to different cultures of origin (4 Italian and 4 foreign). Considering 'diversity' then becomes an essential condition of a sustainable organizing system, meaning that sustainable organization occurs only when the system encompasses 'diverse' actors.

By definition, 'sustainable learning organizations' are those that are able to face the challenge of diversity management in the perspective of sustainable development.

By using a case study approach, this study focus in depth on a few employees and their thoughts and expressions around working in such an international organization and ways of promoting sustainable development. The analysis is based on both content analysis and discourse analysis of the informants' responses. The analysis provide rich data on these issues. The results in this study show that sustainability is not simply the result of financial and concrete organizational efforts. Rather it is the output of the negotiation of specific cultural and moral assets. In this vein, to be sustainable an organization should allow employees to reckon the meaning of the organizational culture, to confront it with one's own values, to adapt it to the daily organizational behavior and finally to feel committed to it, thus granting long-lasting loyalty and engagement to the company. The organization that was the case for this study showed effective ways of engaging employees in processes of involvement that support sustainable learning for both employees and the organization as a whole. This study reflect on many of the core issues at stake for such developments, but also raise many of the challenges that such complex organizations represent in promoting sustainability within diverse environments.

Three comments across

As way of concluding, I would like to highlight three issues that are themes across all the three articles. The three studies presented are all very important in addressing sustainable learning since they provide us with important findings of how sustainable learning might be promoted and positive results in doing so, suggesting concrete ways and models of how to move forward. At the same time, they represent very different contexts and target groups, which makes comparisons difficult. However, three issues seems to stand out as important across the articles, even though they are addressed in different ways.

Notions of agency

Agency and empowerment is emphasized in all the three articles. Sustainable learning is dependent on the ways people feel that this issue is important for them and that they experience possibilities of acting towards environmental issues and development in general. Traditionally such issues often become abstract and difficult to relate directly to the person, but these studies have, in different ways, shown how agency plays a key role in involving people towards sustainability. This goes for children as well as employees in enterprises and international organizations. The studies presented here represent different ways of developing such agency.

Multi-level analysis

All the articles also address the complexities of promoting and developing sustainable learning within social contexts. Even though all of the studies focus on the participants and people within schools and organizations, they also make us aware of the challenges of implementing this within such complex organizations. This imply a need to develop research designs that can provide us with multi-level analysis. In an implicit way the research presented here initiate such a development in our research. As David Olson (2003) has pointed out in his book *Psychological theory and educational reform*:

The problem, I believe, is that the theories that gave us insight into children's understanding, motivation, learning, and thinking have never come to terms with schooling as an institutional practice with its duties and responsibilities for basic skills, disciplinary knowledges, grades, standards, and credentials… What is required, then, is an advance in our understanding of schools as bureaucratic institutions that corresponds to the advances in our understanding of the development of the mind (Olson, 2003 pp. X-XI).

Olson argues that the challenge is to combine different levels in our understanding and analysis of key characteristics of how schools, and other organizations, function in developing conditions for change of activities at different levels, such as working towards sustainable learning.

The roles of ICT

All the studies also emphasize the role of different tools to support changes in attitudes and awareness towards sustainable learning. New technologies are diverse and can be applied in different ways as shown in these studies. Either as promoting video and multimedia as ways of engaging children to digital networks in international organizations. The demand is on how we strategically work to take advantage of the affordances provided by different technologies, both in ways of engaging people about sustainability and in supporting holistic change processes of organizations and changes of practices.

The studies presented here have shown positive outcomes of working towards sustainable learning. However, at the same time they seem to be in an initiating phase of an evolving field of research. They also contextualize this research within an Italian agenda for schools and organizations that is of interest to an international audience, but which also needs to be compared and reflected upon in comparison to similar studies within other countries and contexts. There is a need for more research that manages to grasp the complexity of the matters mentioned above. In a sense, these studies raise many new questions of how to work towards sustainable learning of great importance for societies at large and our global community.

References

Arnseth, H.C., & Ludvigsen, S. (2006). Approaching institutional contexts: systemic versus dialogic research in CSCL. *International Journal of Computer-Supported Collaborative Learning*, 1(2): 167-185.

Engeström, Y. (1987). *Learning by Expanding: an Activity Theoretical Approach to Developmental Research.* Helsinki: University of Helsinki.

Fullan, M.G. (1991). *The New Meaning of Educational Change*. London: Cassell.

Id. (2012). *Stratosphere: Integrating Technology, Pedagogy, and Change Knowledge*. Don Mills, ON: Pearson Canada.

Olson, D. (2003). *Psychological Theory and Educational Reform*. Cambridge: Cambridge University Press.

Paavola, S., Lipponen, L., & Hakkarainen, K. (2004). Models of innovative knowledge communities and three metaphors of learning'. *Review of Educational Research*, 74(4): 557-576.