



Contents lists available at ScienceDirect

## Journal of Cleaner Production

journal homepage: [www.elsevier.com/locate/jclepro](http://www.elsevier.com/locate/jclepro)

## Process framework for identifying sustainability aspects in university curricula and integrating education for sustainable development

Tove Holm <sup>a, b, c, \*</sup>, Kaisu Sammalisto <sup>d</sup>, Thomas S. Grindsted <sup>e</sup>, Timo Vuorisalo <sup>b</sup>

<sup>a</sup> Sykli Environmental School of Finland, Finland

<sup>b</sup> Department of Biology, University of Turku, Finland

<sup>c</sup> Novia University of Applied Sciences, Finland

<sup>d</sup> Faculty of Engineering and Sustainable Development, University of Gävle, Sweden

<sup>e</sup> Department of Environmental, Social and Spatial Change, Roskilde University, Denmark

### ARTICLE INFO

#### Article history:

Received 11 October 2013

Received in revised form

2 April 2015

Accepted 17 April 2015

Available online xxx

#### Keywords:

Education for sustainable development

Higher education

Management systems

Nordic countries

Visualizing

Quality assurance

### ABSTRACT

Sustainability aspects in higher education must be enhanced with more concrete actions. Universities are globally required to have quality assurance to secure and improve teaching and learning, and they use management systems to this aim. Integrating education for sustainable development and management systems are alike in that they are based on continuous improvement and systematic thinking; for both processes all stakeholders need to be involved. Although quality assurance is compulsory for higher education, education for sustainable development has barely been examined or integrated in this context.

This article examines how voluntary integration of education for sustainable development into management systems at universities could facilitate a scheme to overcome the challenges to integrating education for sustainable development that were identified in previous research. For this, a process framework for integrating education for sustainable development with management systems was developed in a network of 11 universities in the Nordic countries. The framework included planning, assessment, monitoring, and implementation of education for sustainable development. It was piloted and applied to identify relevant sustainability aspects in different disciplines, examples of which are provided in the article. The framework can be applied to visualize the implementation of education for sustainable development.

© 2015 Elsevier Ltd. All rights reserved.

### 1. Introduction

One of the conclusions of the United Nations Conference on Sustainable Development, known as Rio+20, was to more actively promote sustainability beyond the UN Decade of Education for Sustainable Development (DESD) (UN, 2012). At the final conference of the DESD in Nagoya in 2014 documented and facilitated examples and best practices intended to materialize into specific ESD recommendations were presented (UNESCO, 2014). These general agendas promote what Lozano et al. (2013) call full implementation, suggesting that sustainability should be included

in all university activities for ensuring education for sustainable development (ESD).

Karatzoglou (2013) argued for ESD research based on the entire Deming cycle (planning, feedback, measurement, and corrective actions or “plan, do, check and act”) (Deming, 1982). The Deming cycle is based on Total Quality Management (TQM) (Shiba et al., 1993), which means continuous improvement and systematic thinking involving all stakeholders.

Quality assurance, which is compulsory globally in higher education (HE), aims to secure and improve teaching and learning (Ewell, 2010; Kliot and Bykovskaya, 2011; Yuan, 2010). Quality assurance is owned by and therefore prioritized by management. The most popular tools for quality assurance in HE are quality management systems developed for industry and based on the Deming cycle (Brookes and Becket, 2007).

Both enhancing ESD and quality assurance are based on systematic thinking and continuous improvement; for both processes

\* Corresponding author. Sykli Environmental School of Finland, Finland. Tel.: +358 50 574 6471.

E-mail addresses: [tove.holm@sykli.fi](mailto:tove.holm@sykli.fi) (T. Holm), [Kaisu.Sammalisto@hig.se](mailto:Kaisu.Sammalisto@hig.se) (K. Sammalisto), [tskoug@ruc.dk](mailto:tskoug@ruc.dk) (T.S. Grindsted), [timo.vuorisalo@utu.fi](mailto:timo.vuorisalo@utu.fi) (T. Vuorisalo).

**List of acronyms**

DESD	Decade of Education for Sustainable Development
EFQM	The European Foundation for Quality Management
ENQA	European Quality Assurance Registry for Higher Education
ESD	Education for Sustainable Development
HE	higher education
ISO	International Organization for Standardization
MS	management systems
QA	quality assurance
TQM	Total Quality Management

all stakeholders must be involved. Yet none of the scientific sustainability conferences has focused on enhancing ESD by quality assurance. According to [Ryan and Tilbury \(2013\)](#), quality assurance systems have yet to be integrated into the body of ESD actions. It remains to be studied whether voluntary management systems, including assessment tools, help to overcome the identified challenges in ESD implementation and can be applied to identify relevant sustainability aspects. Criteria for assessing sustainability in HE, which have been developed by [Lozano \(2006\)](#), [Lozano and Peattie \(2009\)](#), [Roorda and Martens \(2008\)](#), should be applied more generally to utilize the development work that has been done. For a study that focuses on implementing ESD, it is also important to recognize that ESD means implementing a change, complete with enablers and barriers ([Exter et al., 2013](#)), and the barriers must be overcome for the new approaches to be institutionalized ([Smith, 2011](#)).

This study contributes to ESD implementation studies by illustrating the development and application of a framework for how quality management and assurance systems can be applied to support ESD implementation, as well as by identifying relevant sustainability aspects for different academic fields.

The following sections discuss both the previous research about drivers and barriers for ESD and quality management in HE and the action research approach applied in the study. Then the process framework is presented and used to analyze the findings. Finally, conclusions are drawn from the study, with limitations and proposals for future work.

## 2. Literature review

This section discusses the previous research into drivers and barriers for ESD and quality management, as well as the role of indicators, change leaders, and collaboration for ESD implementation in HE. Special attention is paid to the Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden), since these countries have spearheaded ESD ([Nordic Council of Ministers, 2009, 2011](#)). The universities participating in this study were from that region due to ease of access.

### 2.1. Drivers for and barriers to enhancing ESD in HE

The objective for ESD in HE is to ensure that graduates will develop the skills to take economic, ecological, and social aspects into account when making decisions ([Sibbel, 2009](#)) and gain competencies in systemic, anticipatory, and critical thinking ([Rieckmann, 2012](#)).

A global driver for ESD has been that UN chose the decade 2005–2014 to enhance ESD globally ([UN DESD, 2011](#)), for which regional and national strategies have been developed. All the Nordic countries either have ESD strategies or include

enhancement of ESD in their overall national sustainability strategy ([Holm et al., 2012](#)). The DESD was considered on the one hand a success because of all that was accomplished, but on the other hand an eye-opener for the need for more universities to integrate ESD in their curricula ([UN, 2012](#)). Another driver has been the voluntary declarations. From 1972 until 2010, at least 25 different international declarations were published that stressed ESD in HE ([Grindsted and Holm, 2012](#)), but in the targets for Rio+20, no global goals for ESD are mentioned for HE, even though ESD was chosen to be enhanced beyond the DESD ([UN, 2012](#)). The latest declarations are the Higher Education Sustainability Initiative and the Rio+20 Treaty on Higher Education, which were prepared for Rio+20. These differ from earlier declarations in that by signing these, rectors must also state what their university will do to enhance ESD ([Copernicus Alliance, 2013](#); [UNCSD, 2012](#)). This is an important improvement in the declarations, since according to [Leal Filho \(2011\)](#) poor commitment from management has been identified as a barrier to enhancing ESD in HE.

Among the benefits of successful implementation of environmental initiatives in HE are said to be the evolution and development of education and research, the specialization of graduates, and the diffusion of knowledge to society ([Evangelinos and Jones, 2009](#)). A university could implement an environmental management system to enhance sustainability aspects ([Nicolaidis, 2006](#); [Sammalisto et al., in press](#)).

Sustainability aspects have been included in HE curricula but not without difficulties ([Læssøe et al., 2009](#); [Stephens et al., 2008](#)). According to [Evangelinos and Jones \(2009\)](#), high staff and faculty turnover, as well as a lack of functional targets and knowledge regarding the way each member contributes to the goal are obstacles to successful implementation of green initiatives. These resemble the challenges identified by [Leal Filho \(2011\)](#) regarding implementation of sustainability aspects in HE. Two challenges concern communication: (a) interpreting sustainability with a wider meaning, and not, for example, solely in ecological terms, and (b) translating the “added” value of sustainability to different stakeholders. The third challenge concerns the need to raise further financial support and obtain commitment from management and various stakeholders. The fourth challenge is the need for concrete projects that demonstrate what can be achieved, how, and why. [Leal Filho](#) argues that the holistic approach to sustainability enhances the quality of education as well as research. Consequently there is a need to translate ESD theory into practice, which is done in this study by developing a framework by which it can be visualized.

In the Nordic countries, limited teacher qualifications, existing disciplinary boundaries or subject separations, and an overcrowded curriculum have been identified as the main barriers in mainstreaming ESD ([Læssøe et al., 2009](#)). A study from Aalborg University in Denmark, one of the first universities in northern Europe to emphasize sustainability, shows that sustainability work declined after a promising start due to lack of commitment from top management, rejection by technical staff, and a narrow definition of the environmental impact of the university ([Christensen et al., 2009](#)). The focus was on administration rather than the impact from the main tasks – education, research and outreach – so that only 5% of educational programs dealt with sustainability issues. Similar results were obtained at Cardiff University in Wales, where linking ESD in and among different disciplines could facilitate the capability of graduates to take sustainability into consideration in the future ([Lozano, 2010](#)). [Holley \(2009\)](#) studied how 21 research universities in the United States succeeded in meeting the increasing demands for interdisciplinary knowledge and discovered that success is gained by supporting other priorities, such as the specific characteristics and priorities each campus has. One

Download English Version:

<https://daneshyari.com/en/article/8103162>

Download Persian Version:

<https://daneshyari.com/article/8103162>

[Daneshyari.com](https://daneshyari.com)