

# Designing for Blended Learning Approaches for Sustainable Attitudes and Actions

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**Abstract:** As part of the call for action to protect the planet, an increase of interest in applying topics on Sustainable Development Goals (SDGs) into education has been evident in recent years. The agenda calls for transformative Education for Sustainable Development (ESD) which allows learners to achieve knowledge and skills to influence values and attitudes as well as enable individual and collective sustainable actions towards society and the planet. In this work in progress paper the Learning design workshop, developed for supporting educators in designing blended learning for ESD, is presented and discussed. The Blend for ESD framework (B-ESD) is developed based on a literature study and observations from a blended learning course on developing ESD competencies for educators in higher education. Findings showed challenges in how to design for ESD in a blend between online and on-site settings. The Learning design workshop is conducted with inspiration from card-based facilitation methods to support educators in designing for learners to achieve knowledge and inspire for sustainable attitudes and actions. The workshop consists of four stages addressing: *Why, who, what* and *how*, where educators are inspired and supported in the process of identifying subjects to address within sustainability and making pedagogical informed decisions on the usage of online resources to support and supplement on-site learning activities. Findings from the initial iteration showed that the learning design process supports the educators in navigating and acting in the complexity of designing ESD.

**Keywords:** learning design, education for sustainable development, blended learning, online learning

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## 1. Introduction

A sustainable future encompasses *“humanity’s ability to ensure sustainable development, that meets the needs of the present without encompassing the ability of the future generations to meet their own needs”* (Keeble, 1988). Education is identified as one of the key forces central to the processes of sustainable development, where fostering active, critical, and independent citizens, who are able to find democratic solutions to problems and challenges connected to sustainable development is pivotal. In 2015 the 17 SDGs were introduced, where SDG 4.7 in which ESD is anchored, is considered an enabler of them all (UN, 2015). With ESD, it is sought to develop knowledge and skills, as well as influence values and attitudes and enable sustainable actions towards society and the planet. In order to pursue this global goal of designing for ESD, it is of key importance to investigate how ESD unfolds in real educational practice. In this paper we present and discuss a framework for a learning design approach for supporting educators in designing for ESD as a blended learning approach.

## 2. Blended sustainable education

It has been argued that, blended learning has the potential to promote lifelong education, with the sustainability in blended learning depending on a suitable design and management of learning materials and practices, to meet the needs of present and future users (Chen, 2022). Blended learning is an approach to ESD that can encompass a holistic and transformational approach that enables a learner-centred approach, self-directed learning, action-oriented pedagogy and yield a learning environment with possibility of participation, collaboration and formal and informal learning (Rieckmann, 2018). With the need for education to be flexible and adaptable to different contexts and changing societies, digital technologies enables communication, collaboration and learning across distance and have potentials on local, national and global scale (UNESCO, 2020). Blended learning has a sustainable potential regarding time and space for both educators, students and collaborators. The blended learning design gives rise to a flexibility that can be adapted to the *who*, being different learners and to different education contexts and it can easily be updated if necessary. Online resources, such as podcasts, videos etc. allows for learners to engage with them in their own pace, enabling a possibility to differentiate to meet the needs of the individual learner.

Sustainable psychology and pedagogy, strains that it is important that sustainable development needs to focus on hope and opportunities of actions “close to home” and that people's willingness to live and act pro-

sustainable is affected by their belief that it will affect their well-being positively (Nygaard, 2019). Multimodality is also an important element when designing for ESD and should include learning activities and experiences that allows exploration of multisensory real world experiences and develop skills to engage creatively and innovatively for sustainability transformations (Heinrichs, 2021). With blended learning it is possible to have on-site learning activities, but also online activities that the students can carry out in their situated learning setting, bearing in mind, that learning environments is where learners learn what they live and live what they learn. Hence leading to address: How can educators be facilitated in designing blended ESD courses, based on pedagogical informed decisions regarding use of ICT?

### **3. Method and approach**

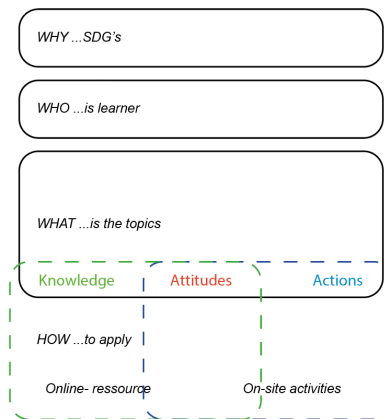
The methodological approach that has been used to form concepts and the learning design framework “Blend for ESD” (B-ESD) presented in this paper is inspired by Design-Based Research (Barab and Squire, 2004). Through literature studies, a field study and an intervention in collaboration with educators we aim for improving contextually-sensitive design principles and concepts for ESD. Due to the rising demand for ESD we were oriented toward creating new knowledge on how to design and scaffold student-centred learning on SDGs and sustainable development through a blended learning approach.

The initial stage of the project was conducted as a field study on the course Circular Economy and Sustainable Development Education (CESDE) (Østergaard et al., 2022), in the fall 2021. The purpose was to gain context-specific insights on designing for ESD. Through the participation in the course qualitative data was collected in the form of participation observations. One of the researchers was enrolled in the course, hence having a double role acting as both a course participant and researcher, while the two others were strictly researchers observing during the course. This gave rise to both passive participation and moderate participation. The main purpose was to gain knowledge on how the course was organized and conducted and how the course participants engaged in the course towards designing for ESD. Hence observing on how the course participants verbally and nonverbally connected with the academic content and activities of the course. Furthermore, the course educators shared planning documents, course material and their reflections on the course. In continuation of the course five semi-structured interviews with course participants were conducted, to explore thoughts on their course experiences. Informed by a literature study on learning design and SDGs and sustainability, the analysis on the empirical data from the field study and interviews on ESD in practice, the B-ESD framework was designed. The iterative principle was unfolded in a following workshop intervention.

The CESDE course goal was to facilitate a “lifelong learning processes” amongst educators regarding sustainable development, to improve the overall ESD in the organization. It consisted of an online kick off day and 4 following on-site workshops, at different internal and external locations, with real-life hands-on experiences (Østergaard et al., 2022). In the continuous efforts to develop the course regarding methodology, partnerships, theory and practice, a collaboration with VIA Research Program for Learning and Digital technologies was established. The aim of the design intervention was to support the course educators in designing a blend for ESD, with the B-ESD framework giving a language for and operationalization of the category’s knowledge, attitudes and actions and to make pedagogically informed choices regarding usage of ICT.

### **4. Design workshop interventions – why, who, what and how?**

Learning design can be seen as a systematic methodology oriented towards supporting educators in making pedagogical choices and principles for designing learning opportunities involving ICT (Conole, 2014; Mor et al., 2013). B-ESD as illustrated in figure 1 is the frame for the workshop for educators to reflect, explicit and share perspectives on why, who, what and how to design for ESD. The first stage addresses why. The course educators reflected and identified overall objectives for the design. The second stage focuses on who are the learners. In this stage the educators were asked to draw an illustration and write a short narrative on who they are designing for. The third stage what aim for the educators to identify and sort topics for the course. They were facilitated in filling in post-it's to identify and sort their ideas and topics using the three categories; Knowledge, which relates to understanding concepts, knowing facts and thinking skills. Attitudes relating to real-life sensory experiences and discussions that influence values and attitudes and hence possibly foster sustainable actions. Actions, which are necessary for sustainable development and only happens where there is the opportunity to take action (Rieckmann, 2018). These originates from the three domains the cognitive, socio-emotional and behavioural domain of learning objectives applied to the SDGs (UNESCO, 2017).



**Figure 1:** Illustration of the B-ESD framework

Based on the identified ideas and topics within the *what* sorted by the categories knowledge, attitudes and actions, the fourth and final stage *how* was conducted with inspiration from the CoED method (Georgsen and Nyvang, 2007). The process supported the educators in discussing and making informed decisions on which on-site activities and online resources, such as podcasts, discussions, video etc. to be developed and/or applied.

## 5. Findings and discussion

Findings from the intervention workshop pointed towards a diversity in arguments for *why* designing for ESD and if the *why* were of personal and/or professional nature. It brought on reflections on if changing attitudes in the course participants personal lives, could move them towards implementing ESD in their teaching practice. During the second stage, it became apparent that *who* was a diverse group, which brought on further reflections on the *what* and *how*. The B-ESD framework supported reflections, identifying and sorting the *what* of the course, using the categories knowledge, attitudes and actions and aided in discussion and reflections on online versus on-site activities. It aided in cementing that lectures by sustainability experts and on-site real world experiences were important (Heinrichs, 2021). Actions focused on personal initiatives, such as not buying pre-rapped food and the initiation of an action in the course participants teaching practice. *What* revealed that knowledge content regarding sustainability and ESD could be presented as online resources. In addressing the *how* the course educators were facilitated in making pedagogical informed choices on usage and designing of the online resources. The B-ESD framework is a work in progress and further iterations on the design workshop is needed.

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