Building Future Skills in Higher Education: An International Blended Project Seminar on Sustainable Development

Patricia Arnold¹, Jeannet Davids², Meret Reiser³

HM Hochschule München University of Applied Sciences, Germany ¹ Hanse University of Applied Sciences Groningen, Netherlands ² Zurich University of Applied Sciences, Switzerland ³

Abstract

In the 21st century, higher education faces a multitude of challenges. Study programs need to contribute to solving the complex issues around sustainable development our societies urgently need to deal with on a global scale. On the one hand, this implies that study programs should integrate Education for Sustainable Development into their teaching whatever the core domain of the program may be. On the other hand, study programs should enable students to acquire so called Future Skills. These skills include, amongst others, skills such as self-initiative, autonomous learning competence, creativity, digital literacy, coping with uncertainty as well as cooperation and communications skills. At the same time, higher education needs to capitalize on new learning and teaching formats, brought about by widespread digitalization. These formats enhance flexibility of time and location and thus cater to broader target groups than the traditional student groups. Yet another desideratum for higher education is internationalization so that students adopt an international global citizen perspective on their specific domains. Against this backdrop, in this paper we describe and analyse an innovative educational design of an international seminar on the Sustainable Development Goals as a case study. Key element of the educational design is students' work on project tasks in international multidisciplinary teams. Students collaborate first online and then share their work on-site, amongst other activities. This educational design strives to contribute to all goals mentioned above. The results of this paper can inform higher education decision-makers and educational designers alike.

Keywords: Future skills, higher education, education for sustainable development, educational designs, blended learning

1. Introduction

In the 21st century the world faces enormous challenges as regards societal transformation towards sustainability. At a global level, rapid change is needed in many aspects to ensure human well-being and conducive conditions for all life on Earth. To bring this change about all educational sectors, including higher education, must contribute with providing learning opportunities that allow students to acquire and develop relevant abilities, knowledge, values, and attitudes regarding sustainability. UNESCO coined the term Education for Sustainable Development (ESD) for all educational endeavours that aim at providing learners with capabilities to collaboratively create a sustainable future for all [1, 2].

From a slightly different perspective, yet linked to the same basic idea, the educational sector, and thus higher education as well, recently engaged in a dialogue as to what competences and skills learners need to navigate a future world with increasing complexity and uncertainty. Different frameworks have been developed to describe these so-called Future Skills [3-7]. Despite their differences in detail, they overlap in the core idea that domain knowledge loses its relative importance for acting successfully in a future world. Of course, domain knowledge remains important but skills in self-organization, networking, collaboration, and being able to take a lead even in ambiguous situations gain importance [4]. In recent years, higher education researchers and in particular educational designers took up this discourse and tried to outline innovative teaching arrangements that seemed to be better suited to equip students with the capabilities needed to confront monumental societal challenges [7-11].

Against this backdrop, we present a design case [12,13] of an international blended project seminar in higher education on the United Nations' Sustainable Development Goals (SDGs). The authors are part of the international team of lecturers who developed the innovative educational design in a

collaborative approach of 10 European universities. The educational design of the seminar is inspired by both the concept of *Education for Sustainable Development* as well as *Future Skills*. We provide a rich description of the design challenges, choices, and decisions [13] we took in developing and fine-tuning this educational design over three editions of the seminar in the years 2022 - 2024. Our reflection and analysis are based on the experience and design process knowledge as being part of the team. In addition, we use meeting notes during the development process, student and lecturer evaluation data as well as evaluative group discussions.

2. Education for Sustainable Development and Future Skills

Currently, innovation in higher education is strongly influenced by two distinct yet interlinked concepts. These are the concepts of Education for Sustainable Development and of Future Skills which will be outlined with their core ideas in this section.

2.1 Education for Sustainable Development

Education for Sustainable Development (ESD) as defined by UNESCO [1, 2] strives for a complete transformation of our education systems so that learners can acquire competences, skills, knowledge, attitudes, and values to contribute to an urgently needed societal transformation towards sustainability. ESD goes far beyond placing the issue of sustainability into curricula as a learning topic. In contrast, it addresses in a holistic way "learning content and outcomes, pedagogy and the learning environment" [1, p. 12]. A narrow focus on sustainability as *learning content* would run counter to the comprehensive transformation of our education systems ESD aims for. At the same time, ESD also exceeds *environmental education* with its focus exclusively on ecological dimensions [1, 2]. In contrast to environmental education ESD comprises support for all seventeen SDGs and thus integrates economic, social and political aspects in addition to ecological aspects.

At the level of competences, ESD aims "to strengthen reflexivity and critical systemic thinking, participation and cooperation, as well as a sense of responsibility, enabling individual and collaborative action for sustainability" [14, p.1]. ESD is deeply linked to SDG Target 4.7: "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, amongst others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development" [2, p.14]

As regards the learning dimensions ESD differentiates three different dimensions:

(1) the cognitive learning dimension: understanding sustainability issues with their complexities and intricacies, (2) the behavioural learning dimension: taking actions for sustainable development at a micro (person), meso (organisation), or macro (society) level, (3) the social and emotional learning dimension: developing core values and attitudes for sustainability, building "empathy and compassion for other people and the planet" [2, p.17], and fostering motivation to take an active role in the needed transformation [2].

ESD is also closely connected to *global citizen education* [15, 16]. Global citizen education means to prepare learners to adopt a perspective of a global citizen, being able to navigate the intricacies of a globally connected world, to face the challenges that arise from global economies, and to shape those economies to the well-being of all [14, 16, 17].

The discourse on which educational designs and teaching practices are effective within ESD emphasizes the need for innovative methods. Sometimes these methods are poignantly summarized as implementing the four "Cs" – Collaboration, Communication, Critical Thinking and Creativity [18,19]. The value of interdisciplinary collaboration is highlighted. Discussions on sustainable development from different perspectives and domain contexts, as they typically occur in such learning settings, are deemed highly conducive to a deep understanding of sustainability issues [18].

However, the concept of ESD is also being criticized at two different levels: (1) despite manifold publications it still lacks conceptual clarity as many players refer to ESD with slightly different understandings of what exactly it entails, and (2) even if a set of core ideas is granted as established ESD remains vague as to the implications on a practical level for educational professionals [20]. There is widespread agreement that further research into these different aspects is needed [14, 18, 20].



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2.2 Future Skills

The concept of Future Skills, a "term with a short history but an enormous career" [21, p.24] is closely connected to ESD but is still a distinct concept. Unlike ESD, it does not take sustainability as its starting point. It begins rather with the open questions of what competences and skills learners need in order to navigate an increasingly complex world. Different studies come up with distinctive frameworks for Future Skills. Up to now there is no widely accepted framework.

UNESCO defines Future Skills roughly as skills required to create a sustainable future for our entire world [2]. These skills include, amongst others, non-domain specific skills such as self-initiative, autonomous learning competence, creativity, digital literacy, coping with uncertainty as well as cooperation and communications skills [5].

For the higher education sector, a broadly discussed study from 2020 [4] highlighted seventeen Future Skills in three key dimensions:

- Subject: Initiative and performance competence, decision competence, ambiguity competence, reflective competence, self-determination, self-competence, ethical competence, self-efficacy, learning literacy
- *Object*: Design-thinking competence, innovation competence, systems competence, digital literacy
- *World*: Future and design competence, sensemaking, cooperation competence, communication competence.

Another Future Skills framework contains 18 skills in 3 categories, with a focus on digital skills. According to their study, future graduates all need *basic digital skills* and *classic skills*. Enough specialists should acquire *technological skills* in addition:

- "Technological skills: complex data analysis, development of smart hardware/robotics, web
 development, user-centric designing, conception & administration of networked IT systems,
 blockchain technology development, tech translation
- Basic digital skills: digital literacy, digital interaction, collaboration, agile working, digital learning, digital ethics
- Classic skills: problem-solving, creativity, entrepreneurial thinking & self-initiative, adaptability, perseverance" [6, p.3].

The UNESCO International Institute for Higher Education in Latin America and the Caribbean (UNESCO IESALC) developed yet another Future Skills framework [7]. It proposes 26 skills in four areas, named (1) personal, (2) social transition, (4) digital transition, (4) ecological transition (cf. Figure 1).

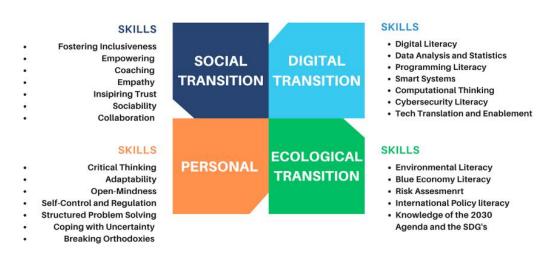


Fig. 1 UNESCO IESALC's Future Skills Framework [7]

Summarizing, the discourse on Future Skills is predominantly work in progress and lacks up to now scientific rigour. In a recent publication leading researchers describe the field of Future Skills as "heterogenous and evolving" [21, p.55]. The researchers point out that many skills sets and frameworks can be characterized as containing a certain degree of arbitrariness. This also applies to their own work.

3. Case Study: An International Blended Project Seminar on Sustainable Development

Against the backdrop of the two concepts of Education for Sustainable Development and Future Skills, their lack of conceptual clarity notwithstanding, we designed an international higher education seminar "Social Europe Days 2024 – We & the Sustainable Development Goals (SED 2024)".

3.1 Context

The international seminar SED 2024 is a blended project seminar collaboratively developed by a network of ten European universities from eight different countries (Belgium, Germany, Latvia, Netherlands, Malta, Romania, Spain, and Switzerland). The collaboration within the network has been going on for more than two decades, with a yearly edition of an international student-centred seminar. Topical foci as well as educational designs have been changing over the years, including two entirely virtual editions [22]. Since 2022 the seminar has been focusing on the SDGs. From 2022 onwards, the format changed to a blended learning format, with parts of the seminar being delivered online and other parts onsite at a partner university's campus or a conference location. Students are typically enrolled in Bachelor programs such as Social Work, Social Policy, Human Resource Management, Labour Law, or Gender Studies, offered by the participating universities. As a rule, students receive academic credit points for it. However, each year we had a few students who could not receive credit points and participated in addition to their regular study programs because they regarded the seminar as a learning opportunity they did not want to miss, even without formal recognition in their respective study programs. In general, students who took part were interested in international collaboration and sustainability issues. Since the blended learning seminar with the topical focus on the SDGs has been offered, 60 to 80 students participated, amongst them 3-8 participating online only. The international team of lecturers, including the authors, comprised 9-11 lecturers in the past 3 years. In 2022 and in 2023 the onsite seminar took place in Berlin, Germany, in a conference location. In 2024 it was hosted by the Belgium partner university, PXL Hasselt University of Applied Sciences, in Hasselt, Belgium. For the first time, the 2024 seminar received funding under the Erasmus+ Blended Intensive Program (BIP). The onsite part comprised between 3 and 5 days.

3.2 Educational Design

The educational design was refined each year in detail but remained unchanged in its core features, (1) the blended learning format, (2) the student-led collaborative project work in International Multidisciplinary Teams (IMTs), and (3) a complementary program with field visits and city walks connected to sustainability as well as formal and informal gatherings of the learning community to come to know each other better. The complementary program is also intended to grow everybody's personal network and to learn about cultural differences while working together. The details of the design described in the following section are those of SED 2024. In addition, we explain how and why they were finetuned across the three versions of SED in the years 2022 – 2024.

3.2.1 Blended Learning Format: The seminar starts with an online Kick-off Day that marks the start of a 5-week online only collaboration phase that in turn leads to a 5-day onsite seminar. During the 5-week online collaboration phase in IMTs, there is a full day of lectures on different aspects of the SDGs with a focus on international policies, the so-called Guest Lecture Day. Students can mostly choose which lecture they attend. However, students' study programs differ, so different regulations applied as to how many, and which lectures to attend in detail.

The Kick-off Day introduces the topic of the SDGs and explains the relevance to all study programs. It establishes some rules of engagement, including the important rules of respecting everybody's privacy and supporting confidentiality in all interactions in the seminar group. Furthermore, it allows ample room to get to know one another in the emerging international learning community. In addition, the

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project assignment for the International Multidisciplinary Teams (IMTs) is shared and its intended openness discussed with the students. Again, we make sure that there is enough time in the IMTs (in online break-out rooms) to make personal introductions, to develop an initial project idea and to agree on working procedures. A final questions & answers session wraps up the Kick-off Day.

Fine-tuning I Keynote Selection - Across the three seminar editions we changed the number and content of keynote speakers. Initially, we had two keynotes on sustainability issues. While the topical input seemed always valuable, we deemed it still somewhat too abstract and remote from students own problems. In the 2023 edition, we therefore had a very young keynote speaker on the topic of how to become a change maker, being a Master student and a start-up founder herself, next to an established keynote speaker in sustainability with all academic credentials. In the 2024 edition, we looked out for a keynote on sustainability issues from a renowned practitioner in contrast to a merely scientific dive into the topic. This keynote was complemented with a talk on recent research results on online collaboration to best kick-start students' work in the IMTs.

Finetuning II Online components - In each edition we had the three online components of Kick-off Day, Online Collaboration Phase, and Guest Lecture Day. In the first edition in 2020, additionally, we had an online Wrap-up Day after the onsite seminar. Its intention was to allow for letting sink in the new knowledge, the experiences made, the discussions and conversations held. However, due to the great variety of academic calendars it has been highly challenging to find a date suitable to all. Furthermore, the onsite seminar took up a lot of students' energy and concentration, so we found it increasingly hard to generate enough energy for a day of reflecting and sharing lessons learnt at a separate day after the onsite seminar. For the combination of these two reasons, in the 2023 and 2024 edition we integrated a joint reflection and evaluation session at the close of the onsite seminar and omitted a separate online Wrap-up Day.

3.2.2 International Multidisciplinary Teams' Project Work: In the International Multidisciplinary Teams (IMTs) students work jointly on a project task, their key assignment during the international seminar. The organizers form teams of five to eight students with maximal diversity regarding nationality, study program and gender. The IMTs are required to come up with a project outline for a feasible project that addresses one or more of the SDGs in their respective university or other local contexts. The IMT's project idea is to be presented at an info booth in a marketplace of project ideas during the onsite seminar. This presentation is intended to be the highlight of the onsite program. Each info booth must include a digital self-explanatory presentation and a poster in the background that allows for a quick recognition of the essentials of the project idea, including an attractive project name. The info booth should ensure that it attracts attention at the marketplace in a creative way. Each IMT is also allocated a tutor from the international lecturer team. It is clearly stated that the role of the tutor is that of a guide at the side in the background. The tutor is the person to whom questions can be addressed to and who gives support in case of conflicts. But the tutor is by no means intended to take the lead in developing a project idea. The lack of more specifications for this assignment is intentional. In dealing with such an under-defined task students are supposed to build their capacity to cope with uncertainty.

Fine-tuning Project Idea Presentation Mode - In the first edition in 2022, we defined as the presentation mode of the project idea a short Pecha Kutcha presentation to the plenary of students and lecturers. Albeit the high quality of project outlines and presentation slides and even with breaks in between, a series of 14 presentations in a row turned out difficult to process. The presentations towards the end of the day seemed to get systematically less attention and appreciation, regardless of the efforts and creativity put into them. Consequently, beginning with the 2023 edition, we changed the presentation mode to a marketplace of info booths format. Students and lecturers alike can visit (and re-visit) the info booths at their own pace during the half-day allocated to this presentation session.

3.2.3 Complementary Program Elements: In addition to the IMT work, the onsite program of SED comprises elements that are intended (1) to bring in the meso and macro level of sustainability to complement the predominantly micro level of sustainability that the IMT projects address and (2) to foster the emergent learning community. Examples for (1) are field visits to NGOs that deal with sustainability issues or expert talks on the intricate pathway of legislation for more sustainable mobility concepts in a city (SED 2023: Berlin's first bike law). Examples for (2) are cultural evenings to which each delegation brings some special food to represent their region or informal city tours and gatherings.

Fine-tuning Increasing Awareness of the Multi-Facetted Topic of Sustainability. To increase students' awareness of the many different facets of the topic that play into striving for a sustainable world and to possibly also involve them emotionally in SED 2024 we included small group discussions on an essay by fiction writer Margaret Atwood on "How to change the world?" [23]. In the essay, Atwood addresses in her typical humorous way several serious questions. How to convince people that change is necessary? Should we start to change personal behaviour or to push for state interventions? And finally, who or what is the world? Does nature belong to it – trees, plants, animals? During SED 2024, we placed this discussion at the beginning of the program, after the welcoming ceremony. Furthermore, for the Guest Lecture Day in SED 2024, we chose to focus on a comparison of international policies for promoting sustainability. This focus was intended to bring in perspectives of systemic change and emphasize the meso and macro level of promoting sustainability yet again.

4. Discussion

We discuss our educational design case in two parts. First, we reflect on the core element of the design, the project work in International Multi-disciplinary Teams (IMTs), using Bekteshi's "Collaboration, Communication, Critical Thinking and Creativity (4Cs)" framework for Education for Sustainable Development [18,19]. Next, we analyse the overall educational design applying the UNESCO IESALC's framework for Future Skills [7]. Together, both frameworks allow us to highlight strengths and reflect on shortcomings of our educational design in a comprehensive way.

4 Cs - Collaboration, Communication, Critical Thinking and Creativity (Bekteshi)

Working in an International Multidisciplinary Team (IMT), students face the challenge of *communication* with students from very different backgrounds and contexts, diverse domain knowledge, all in a foreign language. They have to communicate their opinion clearly, respect different approaches and finally reach consensus on how to proceed. While *collaborating* on the project assignment, students bring their understanding of sustainability into the process. Often, understandings vary and question assumptions that some students take for granted. This way, *critical* thinking is fostered. The collaborative sense-making process students have to engage in to develop their project outline also contributes to developing critical thinking skills. Furthermore, *creativity* is needed to attract attention for the team's project in the setting of a marketplace. Posters, presentations and the entire info-booth are often designed in very creative ways. *Creativity* skills are thus also advanced within the IMT work.

However, all 4 Cs were also compromised in some teams. The open, deliberately under-defined character of the assignment seemed to be daunting for some students. The task was rendered even more challenging by starting to collaborate in the IMTs online. The overall time frame was tight and individual time schedules of IMT members were sometimes incompatible which increased the risk of approaching the task in a superficial way. Students then seemed to have agreed on the guickest way to achieve consensus or the easiest idea to present. This way, diving deeper into the issue of sustainability by negotiating its meaning in several dimensions (social, economic and ecological) appeared to have been rather neglected in some of the IMTs. The significance of the SDGs for students' field of studies then also might not have been deeply understood as intended. In some teams the creativity of the presentation of the project idea also tended to be limited, even though this was more the exception than the rule. In addition, the role of the tutor did not always work out as planned: With the open offer to approach the tutor when support was needed, some teams hardly involved the tutor at all. In contrast, in other IMTs the tutor possibly gained too much weight. Supporting teams in project work so that students build up collaboration, communication, critical thinking and creativity skills seems like walking on a tight rope. Here again, starting in the online-only phase did increase the difficulty of giving the right amount of support at the right moment for diverse teams, in the process of forming an effective working group. Another challenging issue is the distribution of tasks within the team. Tutors included the question of a fair distribution of workload for all team members in the IMT's debrief. But in hindsight facilitating a fair distribution remains a highly intricate challenge as it nearly always is the case with student-led teamwork.

Personal Skills and Skills for Social, Digital and Ecological transition (UNESCO IESALC)

Personal skills: The educational design provides ample opportunities to develop many of the personal skills highlighted in the framework. Critical thinking is facilitated when different understandings and

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positions are discussed in the IMTs. *Adaptability* and *open-mindedness* are needed to agree on a project idea and its presentation. These skills are also needed across the entire program, as collaboration is not only multicultural, but also interdisciplinary. Several program elements will turn out different to students' expectations. Especially teaching methods will differ from methods students are used to in their home universities. To work in teams and achieve a team result as well as to participate in the many complementing program elements *self-control and regulation* and *coping with uncertainty* are also required. Possibly, the IMT work also allows for *breaking orthodoxies* when students develop project ideas that document thinking out of the box or employ very unusual ways of presentations, but this has been rare in the three seminar editions this article is based on. The skill of *structured problem solving* could be developed within the educational design when students in the IMT apply a structured method to reach their team result, possibly also inspired by a tutor's suggestion. However, whether a structured method is applied or not remains open. Structured problem solving is not in the focus of the educational design.

Skills for social transition: The educational design also allows for promoting many skills for social transition. Coming together with 60 to 80 students from different countries and backgrounds, being entrusted with project work that can be implemented, discussing sustainability issues together, jointly exploring NGOs, visiting important political institutions like the European Parliament, and celebrating together can be regarded as empowering, fostering inclusiveness, and practicing sociability and collaboration. Furthermore, in each of the editions students with different disabilities participated successfully and inclusiveness appeared to have been practiced in a natural way. In each of the seminar editions, rules of engagement have been discussed up-front, with kindness, mutual respect and confidentiality featuring high. In SED 2024, students were explicitly invited to name requirements for making the SED 2024 a safe place for them to learn. This program element might have especially contributed to inspiring trust and fostering inclusiveness. Coaching skills could possibly be developed within the IMT work or when taking the lead in small group discussion. In the same settings as well as during all informal program elements empathy could be trained when exchanging different perspectives. However, the educational design focused these skills less than the others.

Skills for digital transition: These were fostered by the educational design to a much more limited extent. Digital literacy could have been increased as online collaboration was a constitutive element as well as when preparing the digital presentation. In addition, for coming up with a project idea and arguing its value, possibly skills of data analysis and statistics played a role, but these skills were not the forefront of the design. The remaining skills for digital transition, according to the UNESCO-IESALC framework, programming literacy, smart systems, computational thinking, cybersecurity literacy, and tech translation and enablement were clearly not addressed with the educational design.

Skills for ecological transition: The educational design put knowledge of the 2030 agenda and the SDGs first. IMT project work as well as many of the complementary program elements evolved around the SDGs as this was the overarching topic of the seminar. Connected to the SDGs, specific environmental knowledge might have been highlighted during some of the field visits. Thus, the educational design possibly also contributed to environmental literacy and, via the Guest Lecture Day, to international policy literacy albeit clearly to a much lesser extent. However, as most of IMT's projects address several of the SDGs and connect environmental dimensions with social and/or economical dimensions, the environmental literacy that they do build up is inherently multidimensional. Also, IMT projects sometimes combine a local with a global perspective which also constitutes a key component of environmental literacy.

Limitations: As any study this educational design case study comes with certain limitations. Reflection and analysis are based on evaluative group discussion amongst lecturers and with students and some evaluation data. Being part of the team of lecturers, respectively educational designers, as authors we could use first-hand knowledge and experience but cannot rule out biased perceptions. In addition, the anonymous survey data is rather scarce.

5. Conclusion

In this paper we presented an innovative educational design of an international seminar on the Sustainable Development Goals in a blended learning format. We analysed in what ways and to which extent the seminar design contributed to Education for Sustainable Development and provided students with the opportunity to build Future Skills, i.e. skills required to solve important societal



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challenges now and in the future. We identified highlights and shortcomings of the design. Summarizing, we suggest that the educational design is suited to build Future Skills and contributes to Education for Sustainable Development. However, further research is needed to investigate how to support students in detail in their learning processes during the different program elements. Follow-up research would also be helpful to explore the lecturer's side of this international collaboration: How do teachers and educational designers develop Future Skills and best contribute to Education for Sustainable Development? It would be equally worthwhile to investigate how their international and multidisciplinary teamwork could be facilitated and further refined.

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