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European Expert Network
on Economics of Education

LEARNING FROM THIRTY YEARS OF EXPERIENCE: CASE STUDIES IN TEACHER EDUCATION FOR SUSTAINABILITY

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THIS PUBLICATION:
This publication is a collection of case studies compiled and written by Prof Daniella Tilbury and Dr Ingrid Mulà to understand and illustrate the catalytic entry points proposed in the report 'Teacher education for the green transition and sustainable development' (2023). The report and the collection of case studies were commissioned by the European Expert Network on Economics of Education (EENEE) and funded by the European Commission. The report focuses its attention on teacher education and development as it relates to primary and secondary school teachers. It reviews documented research and good practice relating to effective teacher education for sustainability with the purpose of informing EU policy decision-making and frameworks.

The full report and accompanying case studies will be available at www.eenee.eu/en/ as from January 2023.

ABOUT EENEE:
EENEE is an advisory network of experts working on economics of education and training. The establishment of the network was initiated by the European Commission's Directorate-General for Education and Culture and is funded by the Erasmus+ Programme. PPMI is responsible for the coordination of the EENEE network. More information on EENEE and its deliverables can be found on the network's website www.eenee.eu. For any inquiries, please contact us at: eenee@ppmi.lt.

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1. GREEN COMMUNITY INITIATIVE: ITALY

This case study is an extract from a research report entitled *"Teacher education for the green transition and sustainable development"* (2022).

RiGenerazione Scuola

OVERVIEW

Breaking away from the traditional in-service course offering, Italian efforts have led to the establishment of a 'Green Community' of technical experts and professionals that can assist schools in addressing learning needs for sustainability as well as contribute to our transition towards a green economy.

"The regeneration of a country starts from within schools. We can, and we will, learn new ways to be on this planet because it is the only one we have."

Ministero dell'Istruzione (2022)

IN ESSENCE

Launched in April 2022, the 'Rigenerazione scuola' programme has over 300 institutional members from: public entities, cultural and scientific institutions; corporate and commercial bodies; as well as, non-for-profit entities. Also forming part of this community are research and scientific institutions and media agencies.

The initiative has a digital component supported with multimedia teacher education resources and access to webinars hosted by professional trainers. Also worthy of note, is the support offered by the national broadcaster. It plays a critical role in capturing learning experiences and sharing good practice arising out of the initiative so that it can be shared across the teaching community.

NATIONAL COMMITMENT

In April 2022, the Italian government committed over 1 billion euros to 'RiGenerazione Scuola' - a new school initiative that seeks to embed sustainability and climate change concerns across the school curriculum. The initiative is informed by the Sustainable Development Goals and ultimately seeks to support Italy's green transition.

The objectives of the progamme are to: overcome human-centric thinking and rebuild relationships between people and the environment *(social)*; acquire knowledge of natural systems and look into ways of minimising detrimental human impact *(environment)*; learn about the bio-based and circular economy as well as prepare for jobs for the zero and regenerative markets of the future *(economy)*.

COMPLEMENTARY ACTIONS

Alongside the Green Community, a national Professional Learning Plan has identified selected different 'Polo' schools to offer LfS training opportunities to teacher coordinators. The teacher coordinators are then mentors and train other teacher colleagues through webinars and by adding to a repository of schools' best practices.

The 'Green Community' is also supported by other actions that seek changes to: the travel and mobility patterns of the school community; the redevelopment of school buildings, redesign of classrooms and regeneration of large green spaces so that they are more energy efficient and have improved access to digital resources. New specialists subjects on the regenerative and circular economy have also been introduced to prepare secondary school learners for the future green economy.

THE GREEN COMMUNITY

The Ministry's website captures how through the 'Green Community' many schools have started the regeneration process. This has involved establishing workshops, competitions and initiatives on reuse, recycling and waste reduction. Support is offered on a regional basis.

GREEN COMMUNITY AVAILABLE TO ALL ITALIAN SCHOOLS

Multimedia content

Webinars

E-learning

The 'Green Community' is there to encourage and support teachers and schools to experience new ways of teaching and learning for sustainability as well as identify good practice. The national Italian broadcaster is capturing this teacher development process through audiovisual content for others to use. A 'Regeneration Week' hosted by the Ministry reward schools that generate change and celebrate this good practice annually.

KEY POINTS FROM THIS CASE STUDY

In Italy, there was acknowledgement at the **highest levels of government** that education and schools play an important role in transitioning a country towards a greener future. This served to motivate and drive these new initiatives.

Building a **community of expertise** to guide teachers in their adoption of, and engagement with, learning for sustainability is a novel way to help schools contribute towards a green transition.

Complementary actions including a national Professional Development Plan helped to structure a diverse but supportive offering to broaden the teachers' experience in sustainability education and learning.

Creating spaces for teaching to explore and experiment with this agenda is important to build confidence in and ownership of this agenda. This is supported by multimedia resources and access to webinars hosted by professional trainers.

Celebrating progress is important to acknowledge effort but also to sustain interest amongst teachers. An annual Regeneration Week, where good practice is shared and teachers are recognised with awards, can sustain interest.

The novel **engagement of the national broadcaster** in generating teacher development materials is also worthy of note. Broadcasting corporations have substantial experience in communication and presenting complex material in ways that are accessible. This type of partnerships can increase the effectiveness of teacher development initiatives.

KEY SOURCES

Council of Europe. (2022, August 17). *Presidency of Italy - news. ReGeneration: ecological and cultural transition starts with schools.* https://www.coe.int/en/web/presidency/-/regeneration-ecological-and-cultural-transition-starts-with-schools

Ministero dell'Istruzione. (2022, August 17). *RiGeneration School Program.* https://www.youtube.com/watch?v=8zyE-2ISvb8

Morning Future. (2022, August 17). *Italy forging a Green Schools Programme with 'ReGeneration School'.* https://www.morningfuture.com/en/2021/08/31/italy-forging-a-green-schools-programme-with-regeneration-school/

Italiana (2022, August 17). *RiGenerazione Scuola: RICREA projects open to Italian schools abroad enter the Green Community.* https://italiana.esteri.it/italiana/en/language-education/rigenerazione-scuola-i-progetti-ricrea-aperti-alle-scuole-italiane-allestero-entrano-nella-green-community

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2. CAREER PROGRESSION AND ASSESSMENT TOOLS: HUNGARY

This case study is an extract from a research report entitled *"Teacher education for the green transition and sustainable development"* (2022).

EMBERI ERŐFORRÁSOK MINISZTÉRIUMA

OVERVIEW

Hungary's online e-portfolio is designed to help teachers assess their own competence in sustainability as well as support career progression in this area. It provides pathways for an in-service qualification and stepping stones guided by a set of indicators.

"

"Connecting Learning for Sustainability to career progression is crucial to encouraging and motivating teachers to engage in their own development in this area. The opportunities for career and professional development are plentiful, as teacher careers paths are not necessarily linear and can take a diverse range of forms."

Mulà & Tilbury (2022)

IN ESSENCE

Hungarian authorities have recognised the importance of tying the development of competence in learning for sustainability (LfS) with the career progression of teachers. It has defined the levels of competence it expects of novice, experienced and master teachers in this area.

Of great interest is its e-porfolio tool that can assist all education staff including school leaders, therapists, instructors and assistants to assess their progress towards the attainment of education for sustainable development (ESD) competences against core indicators. Once sufficient evidence is presented the experience is assessed and accredited as part of an in-service qualification and career progression process.

This case study provides a good example of how to introduce ESD into assessment and career progression opportunities for teaching and support staff working in public education in the country.

THE E-PORTFOLIO

In practice, the online evaluation portfolio requires teachers to:

1. **register to a dedicated website** operated by the Educational Authority of Hungary, where they access a template;
2. **provide evidence** in the form of certificates, presentations, lesson plans, videos or photos needed to assess whether a teacher has attained specific competence goals; and,
3. provide an **overview of professional activities** that do not need to fit into each competence area. This takes the form of a more generic submission.

THE EVALUATION PROCESS

The qualification process, established in Hungary contains competence areas, each with their own set of indicators used to evaluate the e-portfolio [1]. 'Educating for sustainable development' is the seventh area of competence. Educators may advance their careers if they undergo the qualification process against all indicators listed in the competence framework.

Evaluators are teachers themselves who work-part time as assessors and are trained to ensure validity and consistency of evaluation. Whilst schools can choose the criteria for teacher appraisal, evaluation of the selected criteria along a five-stage career model which starts at novice level and progresses to research teachers; the process itself is strictly regulated by the Education Authority.

Evaluators examine the portfolio and assess it based on indicators which correspond to the competence areas. Each indicator is assessed with points (0 to 3) based on the quality of evidence. At each level, there is a minimum of points a teacher needs to gain, and there is a threshold of total points they need to get in order to achieve the career progression they apply for.

The ESD indicators are identified below and descriptions for assessing practising educators are available for specialist areas.

Competence area	Indicator
Proficiency in environmental education, authentic representation of the values of sustainability and a way of transferring attitudes related to environmental awareness	7.1 Helps children and students to understand the differences between unsustainable and sustainable development.
	7.2 Makes use of the pedagogical possibilities of education for sustainable development in their own field of expertise and in their institution.
	7.3 Enables students to contribute with their own actions and behaviours to sustainability, making them aware that the future also depends on them.
	7.4 Helps their students to think creatively about the possible future in the light of the past and the present.

[1] The amendment to the Government Decree 326/2013. (VIII. 30.) came into force in July 2018 making ESD competences a component of teacher's evaluation. This decree states that for the qualification and advancement processes of all education staff in general education.

DESCRIPTORS (I)

Novice Teacher - Pedagogue I
- Knows the expectations of national and institutional pedagogical documents regarding ESD.
- Has adequate knowledge and is aware of the concept and the principles of sustainability in his field of expertise;
- Strives to incorporate these into their everyday pedagogical activities.
- In their pedagogical work, able to authentically present the values of sustainability.
- Able to understand cause-and-effect relationships and highlight connections and solutions between global challenges and local actions.
- Able to present and understand sustainable and non-sustainable systems, actions, and attitudes at the students' age level.
- Strives to develop in students the need for active action and responsible behaviour for the sake of sustainability, and therefore cooperates with its immediate environment.
- Considers it important to adhere to and have others adhere to basic environmentally conscious standards of conduct.
- Encourages positive attitudes towards the environment.

Teachers - Pedagogue II
- Knowledgeable about the basic principles of the UN Sustainable Development Goals, as well as in the practices and tools of education for sustainable development.
- Knows the programs through which their institutional community contributes to protecting, enriching the values of the local social and natural environment or solving its problems.
- Able to interpret and consistently apply the basic principles of education for sustainable development in his own field of expertise and also at the cross-curricular level.
- Highlights the importance of personal responsibility and can strengthen students in contributing to the creation of a sustainable future with their own behaviours and actions.
- Takes an initiative role in the planning and implementation of the institutional program of education for sustainable development.
- Carries out its activities in the framework of professional and community involvement.

DESCRIPTORS (II)

Master Teacher
- Well-versed in the literature on education for sustainable development and knows innovative methods, initiatives and practices in this field.
- In the course of professional implementation, able to cooperate effectively with specialists in various fields.
- Authentically represents the values of sustainability in his professional work, communication and behaviour.
- As a reference personality, supports the development of the competences and attitudes of their colleagues and students in many ways.
- Shares their experiences and suggestions related to education for sustainable development in their institution, as well as in the network cooperation of institutions and cooperation at the social level.
- In their work, takes the initiative and actively participates in the development process of the institution related to sustainability, in the development and transfer of development programmes and good practices.
- Consistently active in developing, consolidating and continuing education for whole-institutional sustainability.

Research Teacher
- Follows the literature, the domestic (national) and the international trends and good practices of education for sustainable development.
- In their work, research and innovation activities are also connected in the field of education for sustainable development and institutional development.
- Promotes the application of scientific results related to sustainability in pedagogical practice.
- Carries out activities in the framework of professional and social public involvement.
- Regularly presents their results related to the formation of environmental attitudes and sustainability learning to a wider professional audience.
- Open to new research areas and methods. Consistently supports the implementation or deepening of institutional-wide sustainability education.

SUPPORT FROM TEACHERS

A study, undertaken in parallel to the introduction of ESD into career progression processes in Hungary, revealed that educators were in support of a teacher appraisal system based on a teacher professional profile. They called for these to be underpinned by clear and concise statements of what teachers are expected to know and be able to do, and in ways which reflect the complexity of the knowledge and skills that teachers need to achieve student learning objectives in ESD.

The study conducted by Varga and Könczey in 2019 also pointed to the need to recognize expertise developed on the job and informed by research in support of their development. It concluded that teaching standards, different levels of performance, and appraisal criteria needed to be clear to all those involved in teacher appraisal. The Hungarian e-portfolio initiative has implicitly sought to address these requirements and counts with high levels of teacher support.

THE IMPACT

It is important to note that teacher appraisal in Hungary has an impact on teachers' salaries as well as career progression. The tool is hosted by the State Secretariat for Public Education which has invested significantly in training and developing guidelines for specialist teachers, and the various career development levels, in support of teachers engaged in the process.

88 000 teachers

primary and secondary school teachers

kindergarten teachers

librarians, school psychologists, speech therapists, special needs teachers, pedagogical experts, supervisors, vocational educators

To date, over 88,000 teachers have used this career progression tool. The majority of teachers using the self-reflection portfolio are from primary and secondary school with 25% located in kindergarten and about 15% of the applicants are librarians, school psychologists, speech therapists, special needs teachers, pedagogical experts, supervisors, and vocational educators.

KEY LESSONS LEARNT

- Competence indicators should be **specific but flexible** enough to suit the work of each educational professional: special needs teachers, kindergarten teachers, subject teachers, speech therapists, psychologists, even principals and supervisors.

- The engagement of a **multi-stakeholder expert group**, consisting of teacher educators, educational researchers, qualification experts, heads of institutions and practicing teachers, to prepare the set of ESD indicators was an important component of this process. This input ensured the assessment points were relevant, accessible, comprehensive and practical.

- Over the past three years, the State Secretariat for Public Education has offered **training** and reached around 18,000 teachers through trainings, briefings, and presentations. This professional development opportunity proved vital in giving teachers confidence to engage with this process.

- A parallel free online mini-course developed by the Educational Authority of Hungary strengthened the **ESD capabilities of educators** and teachers' engagement in sustainability.

- Preparation of **supporting materials** for teachers such as online guidebooks provided detailed assistance for teachers helping them through each step of the e-portfolio process. The guidebooks explain the evaluation system and they give examples of activities and supportive documents that can be uploaded in the context of each competence area. Templates are available with sample materials tailored to the needs of different specialisms or entry points. These are relevant to early childhood educators, teachers of different disciplines, teacher educators, special education teachers, psychologists, and school leaders. These supporting materials were key to the successful adoption of the tool.

- The Educational Authority of Hungary organized **briefings on ESD for all school leaders** in the traditional series of professional learning events called 'Autumn Pedagogical Days'. The offering raised awareness of the tool and led to support from the school leadership team.

- The 'Pedagogical Education Centres' organized face to face **professional programmes on ESD** and workshops involving the participation of hundreds of teachers in each region. This also supported the adoption of this online tool.

- Pre-service teachers are introduced to the e-portfolio and related competences through their **initial teacher education courses**. ESD has also recently become a part of compulsory elements in final examinations or other output requirements of novice teachers.

As a result of this multi-pronged approach, most teachers in the country have already participated in professional development activities of relevance to ESD.

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KEY POINTS FROM THIS CASE STUDY

Locating **ESD within a career progression process**, regardless of where the educators are in the development journey, is an effective means for educators to aspire to develop competences in this area.

The government **collaboration** (in this case: State Secretariat for Public Education) is often key to setting expectations at the national level and developing effective implementation mechanisms.

The **accessibility and practical nature of the indicators** was an important aspect of this initiative as it was important that teachers could relate to them so as to be able to effectively respond to the call for evidence.

The **development of guidelines** which provided advice tailored to each level of progression, specialist subject or area of practice proved key to effective engagement of teachers.

Professional development and supporting activities offered by training and pedagogical centres and the embedding in initial teacher education were key catalysts for its adoption as they helped teachers identify supporting evidence to prepare for the qualification process.

To be able to embed ESD into the teacher competence assessment and career progression, there needs to be **political will as well as a clear policy framework** for ESD. This arrived in 2017. When these are in place then efforts have a catalytic impact as they become part of the initial teacher training requirements as well as of expectations of school leaders.

In Hungary, one-third of educators in general education institutions are part of the whole school ESD network (operating since 2000) using ESD quality criteria which means that **educators have experience of working with ESD indicators**. This was fundamental for the quick adoption of this model.

Adopting a **multi-pronged approach** has led to an increasing participation of teachers in professional development activities of relevance to ESD.

KEY SOURCES

Educational Authority of Hungary (2019, October 20). *Útmutató a pedagógusok minősítési rendszerében a Pedagógus I. és Pedagógus II. fokozatba lépéshez Hatodik, módosított változat.* (Guide to the teacher qualification system for entering degrees of Pedagogue I and Pedagogue. Sixth, modified version.) https://www.oktatas.hu/pub_bin/dload/unios_projektek/kiadvanyok/utmutato_a_pedagogusok_minositesi_rendszereben_6.pdf

Kotschy, B. (2011). *A pedagógussá válás és a szakmai fejlődés sztenderdjei.* Eszterházy Károly Főiskola.

Mulà, I., & Tilbury, D. (2022). *Teacher education for the green transition and sustainable development,* EENEE report. Publications Office of the European Union.

Oktatási Hivatal (2022, August 14). *E-Portfolio and teacher certification.* https://www.oktatas.hu/cimke_lista?keyword=pedag%C3%B3gusmin%C5%91s%C3%ADt%C3%A9s

Réti, M., Lippai, E., & Nemes, M. (2022). Framing the frames: Integrating an ESD approach into an existing national framework. In P. Vare, N. Lausselet, & M. Rieckmann (Eds.). *Competences in education for sustainable development: Critical perspectives* (pp. 93-101). Springer Nature. https://doi.org/10.1007/978-3-030-91055-6_12

Varga, A., & Könczey, R. (2019). *Which ways of evaluation of education for sustainability is acceptable for Hungarian teachers? Hungarian Educational Research Journal, 9*(4), 654–667. https://doi.org/10.1556/063.9.2019.4.54

3. RESOURCES FOR CHANGE: TEACHING AND LEARNING FOR A SUSTAINABLE FUTURE

This case study is an extract from a research report entitled *"Teacher education for the green transition and sustainable development"* (2022).

OVERVIEW

Available in several formats, the resource can be accessed on the Internet or via a CDROM which was widely distributed across UNESCO regions and member states. The CDROM contains the entire website, complete with over 500 Internet links that can be accessed directly from the CDROM. Separate PDF files of every module are also provided, allowing the programme to be printed and used in 'hard copy' format.

"*There are over 60 million teachers in the world – and each one is a key agent for bringing about the changes in lifestyles and systems we need. For this reason, innovative teacher education is an important part of educating for a sustainable future.*"
UNESCO (2002a)

IN ESSENCE

'Teaching and learning for a sustainable future' was an innovative multimedia teacher education programme originally developed by Griffith University (Australia) and then revised and published in 2002 by UNESCO. The resource was developed for use in both preservice and in-service teacher education as well for curriculum developers, education policy makers and authors of educational materials. It contains 25 modules or thematic entry points organised in four distinct sections: 'Curriculum rationale'; 'Teaching about sustainability across the curriculum'; 'Interdisciplinary curriculum themes'; and, 'Teaching and learning strategies'. Whilst the modules are cross-linked, they are designed to be self-contained and can be adapted to suit the interests and needs of users.

This resource changed the course of teacher education for sustainability and how it was perceived within UNESCO as well as supported small groups engaged in teacher development within many countries. It owed much to its predecessors 'Teaching for a Sustainable World' (Fien, 1993) and 'Learning for a Sustainable Environment' (Fien et al., 1997) which broke new ground in the way they presented educational thinking and connected it to tangible classroom activities for educators.

Although many resources exist today that are relevant to environment and sustainability, 'Teaching and Learning for a Sustainable Future', had a focus and numerous design features that changed the way educators were trained and supported in their development for sustainability. It demonstrated the value of these resources in supporting teacher development and yet no resource, to date, has had such far-reaching impact. As we revisit strategies for mainstreaming teacher education for sustainability there is much that can be learnt from the development and design of this particular resource.

CONTENT

A MODULAR APPROACH

Each module takes approximately four hours to complete and together the resource provides 100 hours of learning – the amount of time student teachers would generally be expected to study in a 10-14 week term or semester course. However, selections and groupings of modules can be made to suit educators working in schools wanting to offer in-service opportunities or similarly for non-formal and informal educators to adapt the length of this offering. All these can be undertaken at any time and at any place and without the need for an outside workshop facilitator.

The modules are designed to be very engaging with each containing around five activities and requiring between 30 and 40 minutes to complete. The activities require educators to undertake exercises, answer questions, work through problems, and engage in games. They also require users to analyse and interpret information and to apply ideas learnt to their own curriculum or learning contexts.

In addition, the resource provides a guide to how best use the resource; illustrating five sample course designs in the 'Getting Started' section of the programme. It encourages educators to consider whether they will adapt the modules for: a stand-alone course on teaching for sustainability; a selection of modules forming a workshop on a particular theme or area; or, integration into other courses on specific education topics as enrichment material.

PROCESS OF DEVELOPMENT

The programme was developed after extensive consultation between UNESCO and The Centre for Innovation and Research in Environmental Education at Griffith University, Australia. The Griffith University team prepared the original drafts of the materials using expertise from UNESCO as well as the experience of preparing other resources such as 'Teaching for a Sustainable World' (Fien, 1993) and 'Learning for a Sustainable Environment' (Fien et al., 1997).

An international reference group and over 50 Programme Specialists within UNESCO advised on the text and pedagogical approaches to ensure the programme was culturally appropriate for use in international settings. The first version of the resource was released in January 2001 and revised following an extensive international evaluation involving hundreds of teachers and educators, sustainable development experts and multimedia specialists. The second and improved version became available in 2002 and extended the multimedia component making it highly interactive and engaging through the use of animation, audio and video files, games, and online discussions.

CLARITY AND PURPOSE

This resource was developed at a time when environmental science and nature studies dominated learning practices with some citizen science and global citizenship learning efforts taking place in the margins of schools (Macintyre et al., 2022). The resource was clear and consistent in its purpose. It presented alternatives to the way teaching for the environment was undertaken, placing the educator and learning both at the centre of the learning process. It helped educators take their first steps to mainstream sustainability as a concern in the curriculum and also influenced how national agencies framed learning for sustainability in the coming years.

The resource sought to:
- develop an appreciation of the scope and purpose of educating for a sustainable future challenging myths and clarifying the importance of learner-centred approaches to education in this area.
- clarify concepts and themes related to sustainable development and how they can be integrated in all subject areas across the school curriculum.
- enhance skills for integrating issues of sustainability into a range of school subjects and classroom topics.
- enhance skills for using a wide range of interactive and learner-centred teaching strategies implicit in reorienting curriculum to align with learning for sustainable development.
- encourage wider awareness of available Information and Communication Technologies (ICTs) and of the Internet as a rich source ofeducational materials for professional development.
- enhance skills in computer literacy and multimedia education.

PROFESSIONAL DEVELOPMENT PRINCIPLES AND APPROACHES

The learning experiences in 'Teaching and Learning for a Sustainable Future' reflect four principles of effective and self-directed professional development:

Relevant knowledge: The resource provided knowledge about key issues related to global realities of the time and sustainable development themes from many disciplines. It sought, what it referred to as 'academic rigour' by facilitating an extensive consultation, review and evaluation of its contents seeking to overcome cultural or other biases. Its links to numerous Internet sites, provided multiple entry points into named topics that extended access to information and encouraged critical thinking.

Participatory learning: Experiential learning was the term used by the resource to refer to the active and participatory engagement of educators in professional development. All the modules invite teachers to: i) analyse and interpret information in a variety of forms (e.g. text, tables, diagrams, computer games, and linked WWWsites); ii) review new knowledge in the light of current understandings; iii) develop skills with a diverse set of teaching and learning strategies; and, iv) adapt new ideas and skills to practical educational tasks.

Reflection: The resource places teacher reflection at the heart of professional development experiences in learning for sustainability. A deepening appreciation of the learning challenge associated with sustainability is encouraged by the use of a 'Learning Journal'. It prompts teachers to answer questions in the journal and invites critical reflective practice and to consider practical applications. This is helpful as it also provides a record of what has been learnt, ideas and plans for applying these ideas in local situations, and opportunities for on-going professional reflection. The journal has been designed to allow the busy users to 'save' their work after one or two activities and come back to the module when they have more time.

No technical expertise required: In addition to the above, technical approaches increased the usability and success of the resource. An 'open architecture' was chosen to create the computer files in 'Teaching and Learning for a Sustainable Future'. For this reason, the programme was easily translated or adapted with a minimum of technical expertise and a basic webpage creation application. The resource also provided clear suggestions on how to adapt the programme to suit a variety of educational and cultural contexts.

TESTIMONIALS FROM USERS REGARDING THE VALUE AND IMPACT OF THE RESOURCE WHEN IT WAS FIRST RELEASED

I have been grappling with these issues for many years. It was wonderful to see that it has been pulled together in such a broad, systematic, inspiring and practical way.
SOUTH AFRICA

An impressive piece of work that brings together a lot of disparate sources into one place. Quite easy to navigate and attractively designed... a significant and important resource.
UNITED KINGDOM

All the modules are relevant to our circumstances. The programme provides great insight into the population, environment and the development issues. I intend to incorporate it into our teacher education programme in my university. Very interactive and exciting. It also enhanced my computer literacy skills.
NIGERIA

My perspective has been expanded and challenged. I have gained a more global view. The themes are very interesting, attractive and enjoyable to study because they combine practical activities and concrete examples from the field.
CANADA

In my country, more and more people are paying much attention to sustainable development, but there is a need for more materials and resources. So this programme will be very helpful, especially in pre-service teacher training.
CHINA

Very timely. It is a highly informative and richly referenced. It is also user-friendly and the instructions are clear. Hence, there was no difficulty in using and learning from the package. It combines graphics, sound and text, with web connections. A good learning experience.
INDIA

Most enlightening and well researched. Sources and references are excellent. I want to involve some of my colleagues and integrate it into our courses.
USA

As schoolteachers, we can say that this programme is very valuable and complete. We discovered a lot of innovations, new teaching methods and new methods of presentation of information that were not known to us before.
UZBEKISTAN

The depth and interdisciplinary design of the program, as well as the possibilities for widespread dissemination, will place it as a landmark work toward focus, learning, and internalization of the values required for sustainable living.
COSTA RICA

KEY POINTS FROM THIS CASE STUDY

The success of this resource is partly due to **the sharpness of the objectives and the way in which the modules consistently promote active learning approaches**. Despite having different authors and entry points there is consistency and clarity across the modules. The resource is now twenty years old and much of the information or concepts are dated. Over the years, newer resources have been developed to address teacher education needs but these have mostly been compilations of activities and ideas rather than providing a connected outlook on learning and educating for the environment within the context of sustainability. For this reason, this particular example merits showcasing.

The fact that this resource **built upon the experience of two previous resource development initiatives** (compiled by the same editor) ensured that it was relevant to teachers and their needs. These prior projects were extensively trialed in schools and other settings and this learning helped fine-tune the new resource which was prepared for UNESCO some years later.

The resource was **explicit about the key professional development needs of teachers** in learning for sustainability (LfS) and sought to directly address these through the modules. These needs included:

- How to plan and deliver *interdisciplinary approaches* so as to better understand the interconnectedness of life and the complexity of the problems of the planet.
- How to combine *training about sustainable development* issues with *training in how* to teach about them.
- How to deal with the *complex and values aspects of sustainable development issues* in an educationally worthwhile and professionally ethical manner.
- How to *encourage reflection* (via a learning journal) as a key aspect of on-going professional development.

This project **linked two key agendas** of the time which have assumed great importance in the 2020s – LfS and ICT (now more commonly referred to as digital education). It understood that both had common educational change agendas and saw the potential of combining efforts in these areas.

The resource was framed in ways which was innovative and attractive to teachers who were experimenting with this area of learning. **No prior knowledge was required** and educators could 'dip in and out' of the resource as needed.

The multimedia resource not only identified but also demonstrated the principles of effective teaching and learning that are a necessary part of reorienting educational practice towards sustainability. ***The 'medium' of learning promoted reinforced the 'message'*** embedded and consistently promoted throughout the resource.

Although CD-Rom are no longer viable as they are underpinned by an outdated technology, much can be learnt from the pedagogical design of this resource. The initiative was designed to provide professional development experiences for a ***wide range of educators at various phases of their professional career***. It allowed for maximum flexibility for individual and small group, extending access to many who wished to learn about sustainability or ICT.

The resource offered opportunities for ***independent learning*** through this multimedia format which enabled teachers to no longer have to wait for a workshop or training seminar to become available. This can be a problem for some teachers, especially for those in remote locations.

KEY SOURCES

Fien, J. (1993). *Teaching for a sustainable World. Environmental and development education project for teacher education.* Australian Association for Environmental Education and Australian International Development Assistance.

Fien, J. (1995). Teaching for a sustainable world: The environmental and development education project for teacher education. *Environmental Education Research, 1*(1), 21-33.

Fien, J., Heck, D,. & Ferreira, J. (1997). *Learning for a Sustainable Environment.* UNESCO-Asia Pacific Centre of Educational Innovation for Development and Griffith University Brisbane.

Macintyre, T., Tilbury, D., & Wals, A. (in press). *Fifty Years of Education and Learning for the Environment and Sustainability.* Swedish Government and Stakeholder Forum.

UNESCO. (2002a). Teaching and learning for a sustainable future: A Multimedia teacher education. UNESCO. https://webarchive.unesco.org/web/20170509192615/http://www.unesco.org/education/tlsf/mods/theme_gs/mod0a.html

UNESCO. (2002b). *Teaching and learning for a sustainable future: A Multimedia teacher education programme. Meeting brief.* UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000161849?posInSet=1&queryId=60000cb6-a244-425a-91a6-cf017a810e0f

Wilderness Society. (2013). *UNESCO teaching and learning for a sustainable future.* https://wilderness-society.org/unesco-teaching-learning-sustainable-future/

4. MEdIES REGIONAL CAPACITY BUILDING: INTERNATIONAL NGO

This case study is an extract from a research report entitled *"Teacher education for the green transition and sustainable development"* (2022).

MEdIES

OVERVIEW

MEdIES is a long-standing initiative of the Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO-ECSDE). It is an NGO-led professional development platform and network of educators, in the Mediterranean, interested in gaining further understanding and skills related to sustainability topics.

"As an NGO, connected to efforts on the ground across the Mediterranean, MEdIES is able to bring fresh experiences to training offerings not always captured in research or development work offered by teacher education institutions"

Mula and Tilbury (2022)

IN ESSENCE

Mediterranean Education Initiative on Environment and Sustainability (MEdIES) was launched in 2002 at the Johannesburg World Summit on Sustainable Development and is guided by the Sustainable Development Goals (SDGs) and the Mediterranean Strategy on ESD (MSESD). MEdIES values international exchange and collaboration and learning opportunities outside the classroom. Their offerings target educators working in non-formal, informal as well as in school education contexts. They sometimes reach out to student teachers, educational administrators, and others supporting education.

Over the years MEdIES has established strong collaborative partnerships with UNESCO, the Union for the Mediterranean, the Governments of Greece and Cyprus.

The case study is worthy of attention as testimonials point to how it has been a particularly important platform for teacher education development, especially in countries where national policy frameworks or educator initiatives have been lacking.

REACH

Since 2002 MEdIES has impacted:

9667

Educators
Both formal (teachers) and non formal (i.e. facilitators) through training and seminars.

34723

Students
Through schools visits and targeted initiatives such as student contests, etc.

48052

Citizens
Through public events such at exhibitions, conferences, festivals, etc.

MEdIES OFFERINGS

The initiative has various components which include but are not limited to:

- the development of **educational materials in environmental and sustainability education** for teachers and students. It currently has more than 24 educational resources (printed and online) available in English, Arabic, French, Greek, Italian, Turkish, Croatian, and Portuguese.

- **professional training** and capacity building seminars. Since 2002 workshops and conferences have been organised with over 9,000 formal and non-formal educators trained and 34,500 students directly engaging in education for sustainable development (ESD) activities in countries around the Mediterranean (Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Syria, Tunisia, and Turkey).

- **advocacy** through campaigning for and promoting the Mediterranean Strategy for ESD as well as supporting ICT as an important vehicle for sustainability learning.

- the hosting of an **online hub** where materials, of relevance to the Euro-Mediterranean region, are shared. This platform includes an online library with MEdIES publications and regularly updated news available at: www.medies.net. In addition, MEdIES has developed six online training courses for educators (open, self-paced and free) available at: www.envirolearning.net

- the coordination of **a network** of educators, trainers and administrators to support developments in education for a sustainable future. More than 5000 individual members are currently subscribed. The network remains connected through the online hub.

The network also engages in research and participation in festivals and competitions. A complete description of its activities are listed below:

Advocate

on ESD and provide technical support to the Mediterranean Committee on ESD. They are partners of the UNESCO ESD-Net 2030 Network.

Create

educational resources: student and teacher materials, publications, posters, exhibitions.

Train

ESD trainers and teachers through workshops, seminars, online courses, summer schools, youth exchanges.

Support

the UNESCO Chair & Network on Sustainable Development Management & Education in the Mediterranean (UoA) and the Mediterranean Universities Network (MedUnNET) on ESD aspects.

Sensitise

at the grass-root level through dedicated school visits, festivals, contests, films, etc.

Design

the educational content of e-games and web apps.

Do research

on education and sustainable development topics.

Facilitate

an e-network of approximately 6,000 ESD educators.

TRAINING AND LEARNING OPPORTUNITIES

As an example, MEdIES runs **week-long training courses on ESD** for formal and non-formal educators from European countries and beyond. The courses are funded by Erasmus plus Key Action 1 (KA1 learning mobility of individuals) and combine short theory sessions with workshops, field visits, hands-on, and co-creative group-work sessions. These courses start from a common 'core' based on the principles and methodologies associated with ESD. The courses combine classroom and outdoor sessions as well as visits to locations of special interest.

Another type of activity involves the '**Summer Universities**' which aim to equip participants with the knowledge, skills and methodology tools enabling to engage with Biosphere Reserves, Natura 2000 sites, and other special designated areas as living labs. Since the COVID-19 pandemic, such 'Summer Universities' have taken place in a hybrid format, including a short face-to-face phase accompanied with an e-course which includes experts' video lectures, toolkits, and 'live' (zoom) sessions with experts as well as recorded material.

The **educational programmes** developed by MEdIES for schools and teachers are mostly based on cross-cutting themes such as freshwater, solid waste, resource-efficiency, consumption behaviour, diet/food (biodiversity), climate change, marine litter/ocean literacy and dive deep into hands-on, learner-centred pedagogical approaches associated with ESD. The latter seek to equip educators and learners with knowledge and skills in sustainable development, making them more competent and confident to act for better environment. Special emphasis is given to the role of students/learners as 'messengers for sustainability' to their families and local communities. Popular offerings are the 'Education for alternative water resources', 'Marine litter education' and 'Plastic free schools.'

Testimonials from participants and evidence collected through the years suggests that MEdIES reach is quite unique as it is able to support teacher education development in countries where national policy frameworks, opportunities for training and/or curriculum development in ESD are generally lacking. Through their participation in regional meetings and workshops, educators from these countries are introduced to a variety of methods, tools and key principles of educating for sustainability.

FUNDING AND SUPPORT

The initiative receives sponsorship and funding from international agencies as well as national governments. Key funding in 2022 has come from:

- Erasmus+ (through KA1 & KA2 grants)
- Hellenic Petroleum Holdings S.A.
- GWP-Med (Zero Drop)
- Heraklion Development Agency /Greece
- Ministry of Education, Sport and Youth of Cyprus | Cyprus Pedagogical Institute | ESD Unit
- Region of Crete /Greece
- UNESCO Regional Bureau for Science and Culture in Europe (Venice Office)

KEY MESSAGES FROM THIS CASE STUDY

Much has been achieved through addressing top down (policy and advocacy) needs with bottom-up efforts (working with teachers and teacher educators as well as those that support teacher education experiences). This more ***systemic approach helps*** to mobilise support in learning and education for sustainability across the Mediterranean.

MEdIES has created experiences in partnership with national and international agencies and through ***a co-creation process*** has offered training relevant to regional contexts and needs.

There has been a strong commitment to ***experiential and hands-on learning processes*** at MedIES. This is in recognition that teachers and students learn best this way and also because these approaches are critical to shifting mindsets and values for sustainability.

Information and communication technologies are key to support learning in ESD and build competences of educators and learners in sustainability, something that was particularly evident and urgent during the COVID-19 pandemic and in the post-COVID era.

Building networks to support teacher and teacher educators is important to sustain engagement of those attending training courses and extend their learning process beyond the initial participation.

As an NGO, its reach is quite unique as it is able to support teacher education development in countries where national policy frameworks or national educator initiatives are lacking. Some countries are particularly reliant on non-formal ESD actors (civil society) to build capacity needed for change across the sector.

The MEdIES experience has shown that across the region there are *diverse entry points and levels of progression* in terms of institutional frameworks and policies. Some are quite advanced, for example, having even a dedicated national plan or strategy or enriched curricula (see Cyprus, Jordan, Malta, etc.) whilst other are looking for opportunities to support the development of politics and teachers' professional development experiences (see Algeria, Croatia, Lebanon).

The exchange and close collaboration of EU countries and non-EU countries that has emerged from MEdIES existing efforts shows that its platform and methodological framework *can be further extended / adjusted to other region*s in Europe or the world.

Those hosting the network see themselves as *lifelong learners* who seek opportunities to reflect and evolve as initiatives develop. Research evidence and policy trends are constantly influencing what and how ESD is taught. It is important to keep connected to universities and government agencies to ensure offerings are presenting cutting edge practice.

KEY SOURCES

GHK, & Danish Technology Institute-Technopolis. *Inventory of innovative practices in education for sustainable development.* https://www.ensi.org/global/downloads/Publications/381/Inventory_innovative_practices_ESD_EU.pdf

Malotidi, V. (2009). Education for sustainable development: Training educators in the MEdIES Network. *Life Long Learning in Europe*, XIV(1), 24-28.

Malotidi, V., Alampei A., & Scoullos. M. (2013, June 9-14). *The MEdIES e-network of ESD educators [Paper presentation]*. Proceedings of the 7th World Congress on Environmental Education (WEEC).

MIO-ECSDE (Mediterranean Information Office for Environment, Culture and Sustainable Development) ((2021). The path to sustainability is through education. In L. Ariemma (Ed.), *Bridging the sea: A review of the Mediterranean civil society* (pp. 70-74). Med Dialogue Programme, Particip GmbH. https://meddialogue.eu/wp-content/uploads/2021/02/Publication-Bridging-the-sea.pdf

MIO-ECSDE, & the Pedagogical Institute of Cyprus. (2018). *Sustainable Mediterranean. First year's progress of the MSESD Action Plan - Proceedings of the 1st Meeting of the Mediterranean ESD Committee*, 22 -24 November 2017, MIO-ECSDE, Athens. https://mio-ecsde.org/wp-content/uploads/2018/10/Final_74_soma_lowres.pdf

MIO-ECSDE, & the Pedagogical Institute of Cyprus. (2019). Sustainable Mediterranean. Status update of the MSESD Action Plan implementation - Proceedings of the 2nd Meeting of the Mediterranean ESD Committee and its Regional Workshop on Education for Sustainable Development, 24-26 June, 2019, MIO-ECSDE, Athens. https://mio-ecsde.org/wp-content/uploads/2020/02/sus_med75-1.pdf

Mulà, I., & Tilbury, D. (2022). *Teacher education for the green transition and sustainable development,* EENEE report. Publications Office of the European Union.

Scoullos, M., & Malotidi, V. (2022).Youth as sustainability agents in the Mediterranean: The MIO-ECSDE approach. In UNECE (2022), *Engaging young people in the implementation of ESD in the UNECE Region - Good practices* (pp. 73-80). UNECE. https://unece.org/environment-policy/publications/engaging-young-people-implementation-esd-unece-region-good

UNESCO (2014). *Shaping the future we want: UN Decade of Education for Sustainable Development*; final report. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000230171

UNESCO (2016). *Profile booklet. Key partners of the Global Action Programme on Education for Sustainable Development.* https://sustainabledevelopment.un.org/content/documents/2412unesco.pdf

5. EMBEDDING LFS INTO TEACHERS' PROFESSIONAL STANDARDS: SCOTLAND

This case study is an extract from a research report entitled *"Teacher education for the green transition and sustainable development"* (2022).

gtc SCOTLAND

OVERVIEW

Learning for Sustainability is *an entitlement for learners in Scotland*. This commitment has resulted in sustainability being a professional requirement for all teachers registered in this country and who have to demonstrate that the professional values, skills, knowledge and understanding, and actions in their practice are compatible with a sustainable world and part of an effective whole-school commitment.

"Becoming, being and growing as a teacher in Scotland means making a professional commitment to learning and learners that is compatible with the aspiration of achieving a sustainable world."

GTCS (2022)

IN ESSENCE

The General Teaching Council of Scotland (GTCS) has embedded Learning for Sustainability (LfS) across its professional standards and developed a resource hub to help teachers grow their practice in this area. The GTCS is the national professional body that promotes, supports, and develops the professional learning of teachers in Scotland.

THE STANDARDS

LfS is woven as a theme across the standards for all teachers, irrespective of where individuals are in their career journey. Educators are expected to look into ways to inspire and motivate learners for sustainability across the school and curriculum offering.

Teachers, regardless of age group or specialist area, must demonstrate:

- a commitment to the **professional values** of social justice and sustainability embedding them in professional practice and acting as inspiring, positive role models for learners.
- the use of LfS **themes and approaches**, using local and global real-world and outdoor contexts across the curriculum areas and subjects they are responsible.
- Their involvement in the **practice and ethos of learning** for sustainability throughout every aspect of the life of the school or early years setting, throughout its curriculum, campus, and community relationships.

RESOURCES

To support teachers' growth and development in learning for sustainability, it offers the following:

1. A **'Professional Guide'** to help teachers understand their responsibility to embed LfS into their teaching as part of a whole school approach. It provides support for teachers to reflect on their practice in the context of the Professional Standards, and to consider aspects that may need further advice. It encourages a *heart* (professional values and commitment), *hand* (professional skills and action) and *head* (professional knowledge and understanding) approach to learning for sustainability.

2. A **'sustainability self-evaluation** (**coaching**) **wheel'** which maps areas of strength and growth and searching questions to develop professional practice in this area.
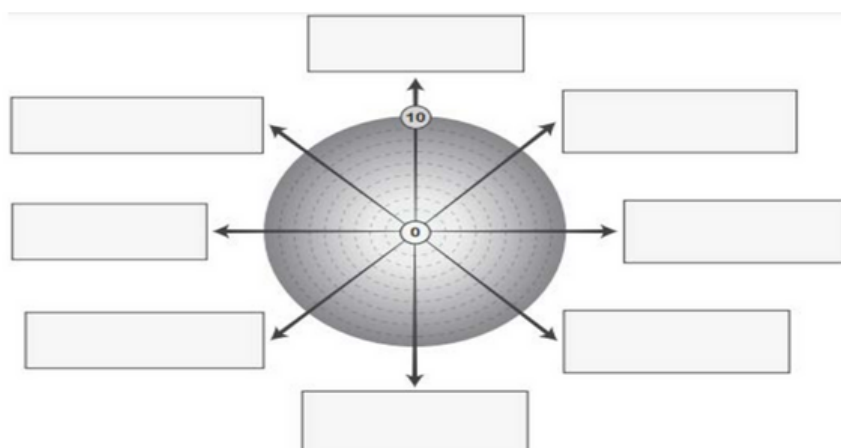
3. An online **self-driven professional development course.**

Source: *https://www.gtcs.org.uk/learning-for-sustainability-module-1/practice.html*

GUIDING REFLECTIVE PRACTICE

The resources offered by the General Teaching Council of Scotland asks questions to help guide teachers who are reflecting on their practice:

Q 01. What aspects of LfS am I already delivering and working on?

Q 02. Which are new for me? In what ways could these be developed and embedded?

Q 03. What support could I seek? How do I support learners and myself in engaging with core values and perspectives to make progress on LfS?

Q 04. To what extent do my learning and teaching approaches effectively support learning for sustainability, using local and global real-world and outdoor contexts?

Q 05. How are learning for sustainability themes and approaches made explicit in my planning, ensuring progression for learners?

Q 06. Am I using relevant findings from LfS research to improve my practice?

Q 07. Am I encouraging learners to lead their own learning?

Q 08. How do I evaluate the impact of LfS on learners, and how can I use evidence of impact to inform my future practice?

Q 09. What opportunities do I provide for learners to contribute effectively to their communities as active citizens?

Q 10. What real-life sustainability issues have relevance for my learners?

Q 11. How might I collaborate with colleagues and learners to plan interdisciplinary learning?

Q 12. How well do I use the school buildings and grounds and community spaces to support learning and develop leadership and skills of learners?

Q 13. How do I involve parents, carers, community and partners in LfS activities?

Source: GTCS (2022)

PROFESSIONAL STANDARDS

The Scotland's Professional Standards include creating opportunities to develop learners' understanding of the environment, culture and heritage, developing a sense of place and belonging to the local, national and global community as well as values for these environments. It also means having a deep connection to the natural world and understanding the significance of the choices we make – now and in the future. Below is an extract:

SPR	SFR	CLPL	ML	SfH
Standard for Provisional Registration	**Standard for Full Registration**	**Standard for Career Long Professional Learning**	**Standard for Middle Leadership**	**Standard for Headship**
2.1.1 Have knowledge and understanding of Pedagogical Theories and Professional Practice As a student teacher you are required to demonstrate knowledge and understanding of: • interdisciplinary learning; • outdoor learning, including direct experience of nature and other learning within and beyond school boundaries;.	**2.1.1 Have knowledge and understanding of Pedagogical Theories and Professional Practice** As a registered teacher you are required to demonstrate a depth of knowledge and understanding of: • interdisciplinary learning; • outdoor learning, including direct experience of nature and other learning within and beyond school boundaries;.	**2.1.1 Have an enhanced and critically informed understanding of Pedagogical and Learning Theories and Professional Practice** As an accomplished teacher you have an enhanced and critically informed understanding of: • approaches to pedagogy and practice: assessment, learning and teaching and curriculum where appropriate taking account of Gaelic medium, and *Learning for Sustainability*; • the most appropriate contexts and environments for learning, including outdoor learning, and how to apply appropriate pedagogies for these environments.	**2.1.1 Understand how to develop and demonstrate a strategic vision.** As a middle leader you: • support and contribute to a strategic vision that embraces *Learning for Sustainability*; **2.1.2 Have knowledge and understanding of political, economic, sociological, technological, legal and environmental trends and developments to enhance positive outcomes for all learners** As a middle leader you: • ensure you have enhanced knowledge and critical understanding of contemporary developments in education and society.	**2.1.1 Fully understand how to develop and demonstrate a strategic vision** As a headteacher you: • embrace *Learning for Sustainability* within the shared strategic vision for the learning community; **2.1.2 Have knowledge and understanding of political, economic, sociological, technological, legal and environmental trends and developments** As a headteacher you: • ensure enhanced knowledge and critical understanding of contemporary developments in 4 education and society (including the role of digital technologies); the environment and the wider global community(including trends and changes in family patterns, work patterns, the media, leisure and politics) and relevant current and emerging legislation.

POLICY COMMITMENTS

Scotland has made a policy commitment that all learners have an entitlement to learning for sustainability and it is the responsibility of all education professionals.
Following on from this:

- The Scottish Professional Standards describe teacher professionalism as being underpinned by sustainability values and a commitment to being positive role models for learners. Since 2013 there has been a professional update requirement for teachers.
- The *Standards for Headship* and The *Standards for Middle Leadership* place the strategic responsibility on school leaders and managers to model sustainability across the school.
- LfS was identified as a key theme within the self-evaluation framework in 2017 making it part of the school inspection process in Scotland.
- These professional standards were revised in 2020 with an even stronger commitment made to LfS.
- Over recent years, the Scottish Qualification Authority has made a commitment to incorporate LfS within all new and revised National Courses and Skills for Work Courses and learning pathways followed by 5,406 schools.

KEY POINTS FROM THIS CASE STUDY

Placing **LfS at the heart of education** means it is expected that all educators look into ways to inspire and motivate learners for sustainability across the school and curriculum offering.

This **national policy commitments** helps develop a coherent response to sustainability and ensures all aspects of teacher education (initial and continuing education) are contributing to this area of learning.

An important step in the embedding of sustainability into curriculum is to weave **LfS as a theme across the standards for all teachers**, irrespective of where individuals are in their career journey. It means that expectations are set at the national level for teachers.

Self-evaluation and action learning approaches are effective means of meaningfully engaging teachers in improving their practice. The **reflective practice questions** defined by GTCS effectively develop teachers' competences in this area.

KEY SOURCES

Christie, B., & Higgins, P. (2020). *Educational outcomes of Learning for Sustainability: A brief review of literature.* Scottish Government/ University of Edinburgh. Scottish Government commissioned report. https://www.gov.scot/publications/educational-outcomes-learning-sustainability-brief-review-literature/pages/3/

Christie, B., Higgins, P., King, B., Collacott, M., Kirk, K., & Smith, H. (2019). From rhetoric to reality: Examining the policy vision and the professional process of enacting learning for sustainability in Scottish schools. *Scottish Educational Review, 51* (1), 44-56.

Education Scotland. (2015a). *How good is our school?* (4th edition). https://education.gov.scot/nih/Documents/Frameworks_SelfEvaluation/FRWK2_NIHeditHGIOS/FRWK2_HGIOS4.pdf

Education Scotland (2015b) *Conversations about leaming for sustainability*, *Case studies of Scottish schools and early years centres to mark the conclusion of the United Nations Decade of Education for Sustainable Development (2005-2014).* https://education.gov.scot/media/owod2x0b/lfs3-conversations-about-lfs.pdf

Education Scotland (2018).*Whole school and community approach to learning for sustainability: Self-evaluation and improvement framework.* https://education.gov.scot/nih/Documents/Frameworks_SelfEvaluation/FRWK11-LfS-framework.pdf

GTCS (General Teaching Council for Scotland). (2018, August 8). *Professional standards for teachers.* https://www.gtcs.org.uk/professional-standards/standards-for-registration.aspx

GTCS. (2021). *Overview of learning for sustainability in professional standards.* https://www.gtcs.org.uk/wp-content/uploads/2021/10/overview-learning-for-sustainability-professional-standards.pdf

GTCS. (2022, August 13). *Exploring learning for sustainability in the professional standards for teachers.* https://www.gtcs.org.uk/learning-for-sustainability-module-1/practice.html

Murray House School of Education and Sport. (2016, August 13). *Lessons for sustainability in Scotland: Issues for education.* www.ed.ac.uk/education

Scottish Government. (2012). *Leaming for sustainability- Report of the One Planet Schools Ministerial Advisory Group.* https://education.gov.scot/improvement/Documents/One-planet-schools-report-learning-for-sustainability.pdf

Scottish Government. (2013, August 13). *Ministerial response to the One Planet Schools Report (Learning for Sustainability).* https://education.gov.scot/media/nqnfd3ws/scottish-government-response-to-the-one-planet-schools-working-group-march-2013.pdf

6. THE UNIVERSITY EDUCATORS FOR SUSTAINABLE DEVELOPMENT INITIATIVE

This case study is an extract from a research report entitled *"Teacher education for the green transition and sustainable development"* (2022).

OVERVIEW

This initiative made a contribution to the professional development of university and teacher educators in the area of Education for Sustainable Development (ESD). It documents how best to reach educators that are not champions of sustainability and to develop professional support that helps overcome structural obstacles to mainstreaming sustainability within education.

"Although small boats have begun to sail educational waters, captained by discipline specialists, grounds staff or curriculum champions, little strategic progress or systemic change had taken place in support of ESD."

Ryan & Tilbury (2013)

IN ESSENCE

The key focus of the University Educators for Sustainable Development (UE4SD) was mainstreaming ESD into higher education, including teacher education. It brought together 55 higher education institutions, organisations and associations in 33 countries in Europe to support university educators, regardless of their courses or specialisation, to reorient learning and teaching towards sustainability. Some institutions focused on reframing courses that prepared future school teachers.

The project recognised that higher and teacher education champions are vocal and visible and that their efforts have helped us understand that upscaling is not simply a matter of raising awareness about the value of ESD.

Key to this initiative was a recognition that those often driving ESD agendas had little experience of educational change or how to overcome substantial obstacles to change in education systems.

FROM TEACHING PRACTICE TO CHANGE MANAGEMENT

UE4SD recognised that most professional development offerings have been aimed only at improving teaching practice itself. Developing leadership and the ability to influence and change the way the curriculum is shaped has received little attention so far, in professional development.

UPSCALING

UE4SD aimed to upscale efforts in ESD by reaching out to educators and education leaders:

- who would not consider themselves champions of sustainability, but who were committed to quality of learning and education. The initiative made a link between educational innovation, pedagogical change, and learning for sustainability.

- who needed support in understanding how change is planned and led to overcome obstacles to ESD and other efforts which often keep educational innovation in the margins of education.

UNIVERSITY OF GLOUCESTERSHIRE

CHARLES UNIVERSITY

UAM Universidad Autónoma de Madrid

LEUPHANA UNIVERSITÄT LÜNEBURG

The project was funded by the European Commission's Lifelong Learning Programme – Erasmus Networks (2014) and was led by four core partners: the University of Gloucestershire (UK, Project Lead), Charles University of Prague (Czech Republic), Universidad Autónoma de Madrid (Spain), and Leuphana University of Lüneburg (Germany). It was supported by the COPERNICUS Alliance, the European network of universities committed to advancing sustainable development in education, research, and practice.

BEYOND ENVIRONMENTAL GOALS

The UE4SD initiative was framed in a language that appealed to those not traditionally associated with ESD. It made clear that its intentions were to improve education and not just the environment. This meant that university leaders found it easier to engage and align with institutional change priorities which included pedagogical innovation, student engagement, and core competences. It focused its efforts on the development of professional development processes and resources informed by experiences of what was happening in institutions across Europe.

THE PROJECT

The three-year project was structured as follows:

YEAR 1 ▶

REVIEWING THE 'STATE OF THE ART' AND IDENTIFYING LEADING PRACTICE (2013-14)

This consisted of 4 regional mapping reports which were then combined to provide an overview of leading practice across Europe.

YEAR 2 ▶

DEVELOPING NEW RESOURCES AND GUIDANCE TOOLS (2014-15)

The data and examples collected through the State of Art research was used to develop case studies and an online platform of resources for those wishing to advance ESD in their institution. The examples presented aimed to tackle the 'how' as well as the 'what' of teaching and encouraged the development of professional competences in ESD and broader educational change.

YEAR 3 ▶

DEVELOPING AN ACADEMY FOR ESD IN HE (2015−16)

In the final year of the project, the UE4SD Academy was launched with accompanying professional development materials. These immersive academies saw institutional teams map ESD provision and opportunities in their institution, identify opportunities and strategies to mainstream ESD as well as challenges and obstacles which could stall these goals. Futures envisioning as well as institutional planning methodologies were used.

Professional Development Journeys in ESD

ESD invites educators to reflect on, rethink and reframe their approaches and priorities in teaching. Therefore it brings a range of professional challenges to the university educator, such as:

- Understanding how new pedagogies could be applied in their subject
- Linking ESD pedagogies with the specialist content they teach
- Reframing what quality learning outcomes might look like with ESD
- Engaging with students in different ways in the learning relationship
- Digesting new sustainability thinking and practice in their industry/profession
- Learning more about how to achieve education change in their workplace

Support is needed to take on these ESD challenges, to absorb new ideas and find space to reshape practices and plans, as well as to influence the ideas of others.

Source: https://ue4sd.glos.ac.uk

BEYOND CHAMPIONS

The project posed the question 'how can educators who are not champions of sustainability be engaged in teaching and learning in this area?'. Its goal was to ensure all students had an opportunity to learn about and for sustainable development. This could only be achieved through mainstreaming and taking the agenda beyond the already committed educators. This meant situating ESD offerings within the agenda of learning and pedagogical innovation which requires professional support for educators and education leadership teams.

FACILITATING CHANGE

Key to the success of the UE4SD initiative was its Academy for ESD which focused solely on how supporting educators and leadership teams understand and map change strategies for the institutions so as to embed ESD. The focus was on understanding how the system is resilient and requires multiple entry points and efforts to land a change and the importance of aligning ESD with institutional priorities to get the attention (and support) of the senior management teams. The project gave the teams experience of and support for challenging the system.

THE UE4SD RESOURCE

This online toolkit contains a range of practical materials of use for anyone who teaches, supports learning, or works in staff development. It is suitable for beginners as well as specialists, in any subject. Its focus is ESD as an approach to rethinking education and transforming learning.
This resource has examples, reflections, ideas and tools, to bring ESD into education practice and professional development for educators.

Purpose	quick guide to the UE4SD project and its focus on ESD professional development
Policy	mapping policy landscapes and examples of recent ESD in HE/TE policy
Principles	what ESD is and what it means in practice for university educators and their professional competences
Practices	examples of ESD professional development across Europe and the UE4SD Academy created by this project
Pathways	learning from this project and futures for ESD professional development
Publications	further reading, relevant literature and useful websites

KEY OUTCOMES

The project generated the following outcomes:

Development of the network of 53 European partners, through annual meetings, online communications and active contributions to the project processes and results.

Inquiry processes that informed a series of mapping reports that have built a shared picture of current expertise and recent experiments in ESD professional development across Europe.

Sharing of experiences and reflection on selected projects and initiatives, to produce a leading practice publication of significant examples of ESD professional development.

Initiation and pilot programme of the UE4SD Academy, offering a model and set of real experiences with university teams developing their ESD competence.

Engagement of a range of policy stakeholders with the issues of ESD professional development, including policy-makers, key agencies and leaders in member states.

Synthesis of the findings and insights of the project, as well as notable examples of practice and the UE4SD Academy products were made available on an online resource platform.

The UE4SD evaluation pointed to how the project had also contributed to`;

- shifting understanding of ESD and its relationship to professional development for partners;
- engagement of colleagues with this educational priority at institutions across Europe;
- raising the level of discussion on professional development among ESD practitioners;
- creation of new tools and adaptable examples that can inform future innovations in practice; and,
- sharing of localized projects that reflect different circumstances for ESD practice.

KEY POINTS FROM THIS CASE STUDY

Recognising that ESD is an approach to education that **aims to reorient the learning experience** and the capabilities people develop, so they can act in support of more sustainable ways of life. It is not a content-based approach to education.

ESD's focus is on pedagogy. This means it seeks not just to 'teach about' sustainable development and share expert knowledge in this area, but to equip people to respond to the complexities and uncertainties of the future. It prioritises the use of both established and less well known pedagogical approaches, such as: futures thinking; learning to change; systems thinking; stakeholder engagement; critically reflective thinking; engaged and participatory learning.

Effective ESD requires an ability to change learning dynamics and to influence education practices beyond the classroom, engaging teaching colleagues and shaping the priorities and plans of education providers

Existing ESD efforts in higher education are often linked to sustainable development research and the teaching of specialist topics in sustainability, rather than on innovative pedagogies that will extend the capabilities of students, or **building skills for change and leadership in educators.**

The initiative was **informed by a State of the Art report** that collated data across most European member states and which documented a lack formal professional development opportunities in sustainability. The project targeted specific needs identified by the study.

It is important to **go beyond recruiting champions** if you are seeking to embed rather than develop single initiatives or specialist courses. Otherwise, it can feel as if the responsibility belongs to the one person designated or volunteering to coordinate activities in this area. ESD should be a core expectation of all involved in teaching and learning and responsible for its quality.

Mainstreaming the agenda requires **leadership teams to be engaged**. This often means aligning ESD to core priorities of the organisation or institution which may include global or citizenship education; active and/or transformative learning, student engagement or other pedagogical innovation; curriculum reform, 'whole person' education, for example. Finding ways to align with these core priorities is important to overcome some of the barriers.

Creating spaces for teams from the same school, college or university to **come together to plan and map strategies for change** is an important part of the mainstreaming process. External facilitators or mentors can assist these teams to advance plans quickly and resolve any tensions that may arise.

The UE4SD project provided some **tangible insights into how professional development happens**; through its Academy, new formats to those traditionally adopted were explored. Different learning opportunities were needed to think through how change in education systems can happen and how best to engage colleagues, students and professional partners with ESD in an institutional or school context.

KEY SOURCES

Kapitulčinová, D., Dlouhá, J., Ryan, A., Dlouhý, J., Barton, A., Mader, M., Tilbury, D., Mulà, I., Benayas, J., Alba, D., Mader, C., Michelsen, G., Vintar Mally, K. *Leading practice publication: Professional development of university educators on Education for Sustainable Development in European countries.* Charles University in Prague.

Mader, M., Tilbury, D., Dlouhá, J., Benayas, J., Michelsen, G., Mader, C., Burandt, S., Ryan, A., Mulà. I., Barton, A., Dlouhý, J., & Alba, D. (2014). *Mapping opportunities for professional development of university educators in education for sustainable development: A state of the art report across 22 UE4SD partner countries.* University of Gloucestershire.

Ryan, A., & Tilbury, D. (2013). Uncharted waters: Voyages for education for sustainable development in the higher education curriculum. *Curriculum Journal, 24*(2), 272-294. https://doi.org/10.1080/09585176.2013.779287

UE4SD (University Educators for Sustainable Development) (2022, August 28). https://ue4sd.glos.ac.uk

7. FUTURES EDUCATION: DENMARK

This case study is an extract from a research report entitled *"Teacher education for the green transition and sustainable development"* (2022).

COPENHAGEN INSTITUTE FOR FUTURES STUDIES

OVERVIEW

The *Copenhagen Institute for Future Studies* is seeking to join up agendas of technological transition, sustainable development, learning for change and the development of educators as future practitioners. It sees the future as a learning process and not a destination.

'By becoming more conscious of how our understanding of the future guides these decisions, both in a professional and personal setting, decisions can be choices that are better informed and less shaped by biases and misguided assumptions."

CIFS *(2021)*

IN ESSENCE

The *Copenhagen Institute for Futures Studies* (CIFS) is a non-profit think tank that uses and develops futurist methods to innovate and solve strategic challenges as well as shift mindsets.

The Institute is involved in initiatives that reframe learning experiences to be more futures oriented for the benefit of people and planet.

In 2022, the Institute is home to the Danish hub for 'Teach the Future' and the UNESCO Chair in Anticipatory Leadership and Futures Capabilities. It offers a Masterclass programme that prepares educators and other professionals to engage with sustainable futures.

FUTURES DEMOCRATISATION

At their core, the Institute's programmes and efforts seek to democratise the future. They recognise that, although people and communities have always anticipated the future, the power to influence futures has traditionally been held by few — mostly politicians, fiction creators or leading science and technology companies. Its work actively extends futures literacy and develops anticipation as a skill for 'public good'. In order to make the creation of alternative visions of the future more available to the public, by training educators as futures practitioners they hope to shift the likely futures which we currently face.

INFLUENCING TEACHERS THINKING AND THEIR PRACTICES

CIFS recognises **anticipation** and **futures thinking** as a learning process. Through it students are able to gain agency and develop empathy as well as understand global citizenship and the complexity that underpins it.
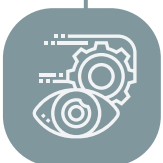
CIFS uses **foresight methodologies** to shift teachers outlook and engagement with the future.

CIFS goes to schools, colleges, and universities to offer on-site training and boot camps that enable organisations and communities to **cultivate futures literacy.**

CIFS offerings acknowledge that educational systems largely reflect teaching structures and methods that have their roots in the industrial age. It recognises that the world is changing requiring young people to have the skills to **shape an increasingly unpredictable future.**

In 2022, CIFS is offering an 'Applied Strategic Foresight' programme for practitioners; a Masterclasses on Futures Literacy; as well as tailored programmes to support **new curricula for the future.**
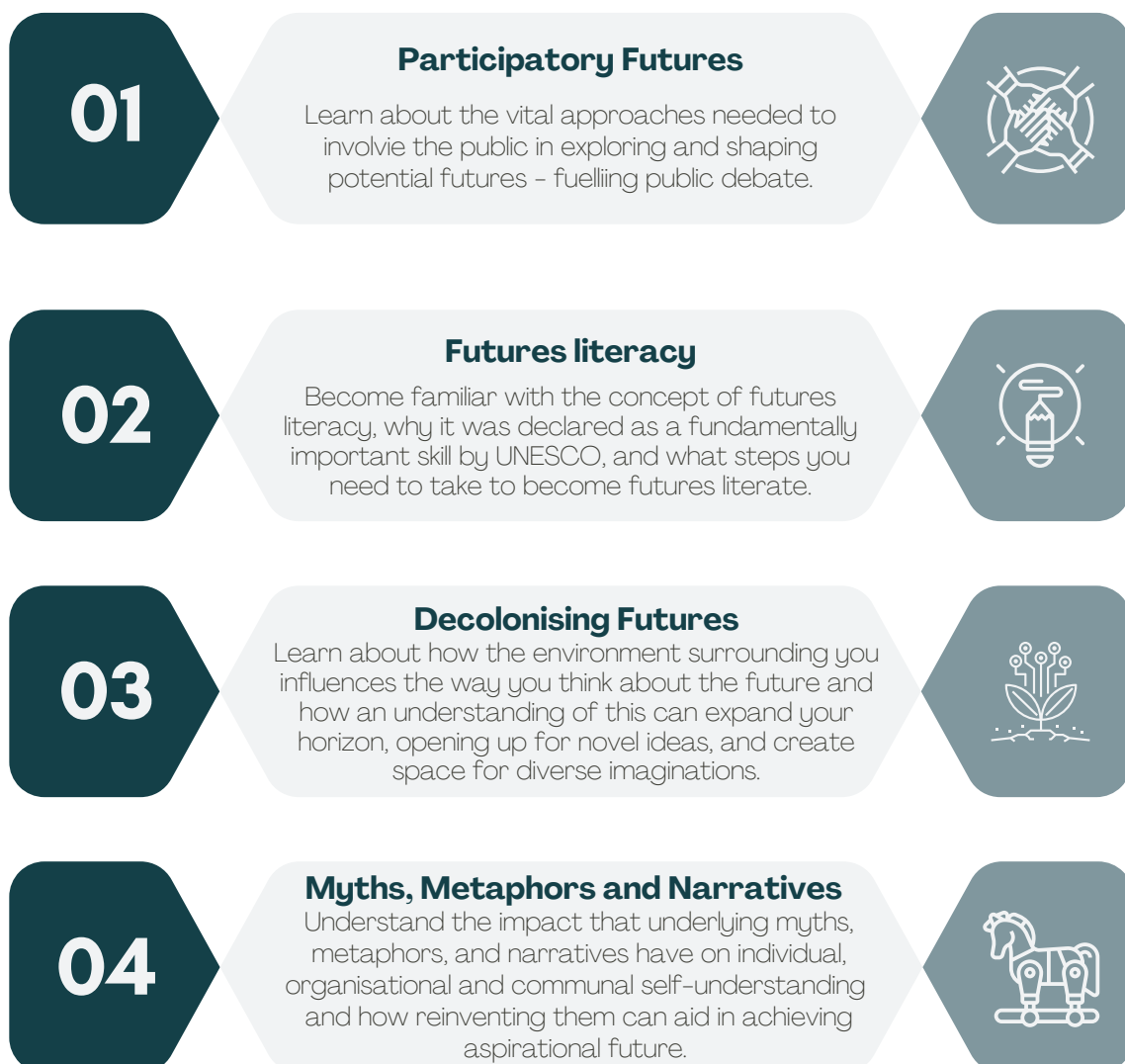
CIFS creates spaces for learning from failed experiences, pilots, experiments, and explorations. In addition, educators are encouraged to **solve complex problems in a self-organising way** that enables them to think independently and act collectively.

CIFS emphasizes arts and culture as important learning spaces to explore alternative futures, **avoid structures and bias that inhibit** our thinking.

MASTERCLASS: MORE, BETTER AND BRIGHTER FUTURES

The Institute's masterclass uses different building blocks for enhanced futures imagination and anticipation. It seeks to **deepen fundamental foresight knowledge** through the analogy of streetlights. Without futures thinking, we become blind to paths ahead, and our actions today may be clouded by bias, rooted in misguided assumptions, or suffer from poverty of the imagination. Through action learning, this masterclass provides a set of hands-on tools and frameworks that help educators become more futures literate — an essential skill for the 21st century. These include:

01

Participatory Futures

Learn about the vital approaches needed to involvie the public in exploring and shaping potential futures - fuelliing public debate.

02

Futures literacy

Become familiar with the concept of futures literacy, why it was declared as a fundamentally important skill by UNESCO, and what steps you need to take to become futures literate.

03

Decolonising Futures

Learn about how the environment surrounding you influences the way you think about the future and how an understanding of this can expand your horizon, opening up for novel ideas, and create space for diverse imaginations.

04

Myths, Metaphors and Narratives

Understand the impact that underlying myths, metaphors, and narratives have on individual, organisational and communal self-understanding and how reinventing them can aid in achieving aspirational future.

The masterclass is an opportunity to cultivate a 'futures literacy mindset' while expanding networks through exchange of experiences and ideas with like-minded professionals from other communities and industries.

PRINCIPLES

The work of the Institute is guided by principles which see 'Strategic Foresight' as:

- a form of collective intelligence;

- a systems-thinking approach to support resilient organisational futures;

- a process in pursuit of future school or organisational success;

- a process that challenges mental models and organisational perspectives;

- a process that avoids making predictions of the future, but rather helps explore plausible futures.

These place new demands on learning processes, which must foster foresight, cognitive flexibility, create motivation and social resources. They draw upon the OECD's Learning Compass' Anticipation-Action-Reflection (AAR) cycle.

NEW FRONTIERS FOR THE FUTURE (I)

In addition to the learning processes and approaches outlined above, the Institute is exploring new spaces for engagement with the future:

The digital transitions and the metaverse

The Institute is inviting educators and other professionals to imagine a future where the physical and virtual worlds have merged. Where surroundings are supplemented with virtual layers, enabling them to experience and interact in completely new ways and enhance the imagination to explore alternative futures and how they influence lives and quality of life. For advanced uses, the Institute invites an exploration of four plausible future scenarios on the immersive metaverse as well as question critical uncertainties and impact of the metaverse itself.

It sees the exploration of possible futures in the metaverse as important for learners to understand and critically approach the next frontier of the digital transition. Learners explore the emerging conceptual and collective idea of the metaverse and its components of Web 3.0, NFTs, Blockchain technology and assess digital power dynamics and infrastructures of present and future societies. They consider the significance of the metaverse and shift away from a centralised to a more decentralised approach to online presence with impacts felt across societal scales, governance and business models as well as community building.

NEW FRONTIERS FOR THE FUTURE (II)

The power of arts and culture in fostering futures literacy

CIFS works with storytelling, fiction and art as powerful forces that shape our conceptions of the future, to cultivate futures literacy and to democratise the conversation about the future for wider audiences. The Institute recently published the report *Futures Shaping Art – Art Shaping Futures* that explores art as a lens through which we can explore uncertainty and examine both the need for and limitations of human agency in an increasingly complex future. This publication explores the role of art as a unique and invaluable form of futures inquiry and showcases how art and futures studies interrelate and shape each other in various ways. The work draws on examples and cases from international contemporary art, curators, art institutions, and futurists. Among the many initiatives and projects, CIFS is involved with futures curricula development at national art schools in Denmark and acts as futures advisor to a range of local and international arts and culture organisations such as Futurium, Berlin and FORMS – the Future Oriented Museum Synergies Network.
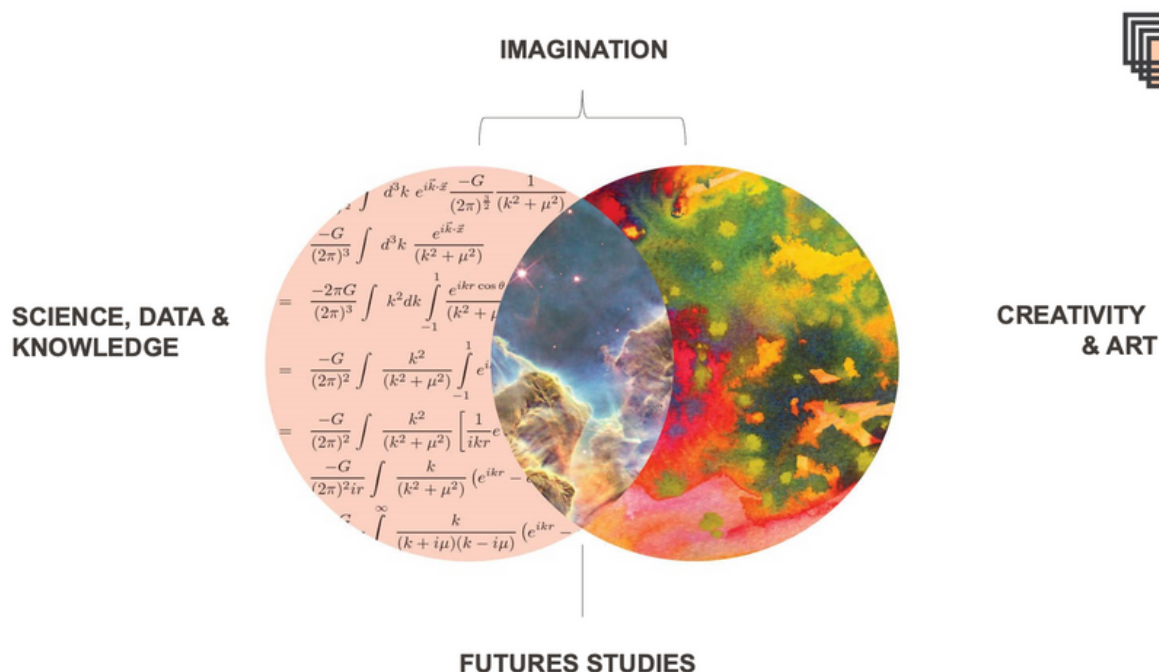
KEY POINTS FROM THIS CASE STUDY

Anticipation as learning cultivates futures literacy, an essential skill for the 21st century needed by young people as they prepare for an uncertain and complex future.

Empowerment through futures literacy allows learners to better understand the role of the future in what they see and do at present. Being futures literate empowers the imagination, enhances our ability to prepare, recover and invent as changes occur.

Anticipatory approaches to learning environments can better equip educators to teach education and increase a sense of agency and participation.

Strategic Foresight approaches can help learners create and invent for sustainable development as well as engage them meaningfully in shaping, ideating, designing, prototyping tangible and intangible ideas for a better world.

Through anticipatory planning, experience and reflection, learners deepen their understanding and broaden their perspective by using the **future as a critical process to review the present** and not just to review a specific and predefined destination.

Futures thinking is **best practiced and learned as a social process in relationship with others. Through collective intelligence processes** learners are upskilled through working together to challenge underlying anticipatory assumptions and cognitive biases that can impair decision-making and world views.

Futures thinking can help democratise education processes through **challenging power relationships** in the teaching and learning dynamic as well as social engagement and progress in wider society.

Arts and culture represent ideal institutions, outlets, mediums, and practices for more democratic and sustainable futures. They assist exploration beyond the ordinary, rational, materialistic and capitalistic paradigm, and provide complementary to the science already taught in schools. They challenge dominant thought patterns, as well as ways of knowing and being.

KEY SOURCES

CIFS (Copenhagen Institute for Future Studies). (2021). *Using the future - Embracing uncertainty, improving decision-making and democratising tomorrow*. https://cifs.dk/p/using-the-future-embracing-uncertainty-improving-decision-making-and-democratising-tomorrow

CIFS. (2022a, August 21). https://cifs.dk/

CIFS. (2022b, September 1). *Futures Seminar #2: Futures for All – Anticipation as a public good.* https://www.youtube.com/watch?v=oTr-fa2FDCY

CIFS. (2022c). *Futures shaping art / art shaping futures.* https://scenario.wpengine.com/wp-content/uploads/2022/01/SR-06-Web-NY.pdf

CIFS. (2022d). *The future of the metaverse.* CIFS.

CIFS. (2022e) *Principles for strategic foresight.* CIFS.

8. EDUSTA: MICRO-CREDENTIALS FOR EDUCATORS

This case study is an extract from a research report entitled *"Teacher education for the green transition and sustainable development"* (2022).

OVERVIEW

EduSTA is an Erasmus+ Teacher Academies initiative that is creating digital badge-driven learning pathways where teachers can develop and demonstrate their sustainability education competences. It considers these competences in the context of curriculum development, pedagogical design, and assessment.

> *"There is value in micro-credentials as a tool to demonstrate proof of the learning outcomes that a learner has acquired following a short learning experience."*
> European Union (2022)

IN ESSENCE

The EduSTA – Academy of Educators for Sustainable Future project seeks to enhance teachers' capabilities to promote Key Sustainability Competences (KSCs). The project recognises that education needs to experience a profound transformation if it is to contribute to the green transition but also that educators and teachers need to develop capabilities so that they can become the change makers in education. It is in this context that it is developing tools for initial teacher education and further training of in-service teachers in sustainability.

The project outcomes include transferable micro-credentials. These are developed or credited using digital open badges as a platform for demonstrating learning for sustainability (LfS) competences and acquired knowledge.

THE PARTNERSHIP

The EduSTA consortium gathers five teacher education institutions from Finland, Sweden, the Netherlands, Spain and the Czech Republic which join forces with Tampere Vocational College Tredu (Finland) and the Association for Teacher Education in Europe (ATEE) (Belgium). The consortium is intentionally composed of very different education realities and differing teacher education traditions so as to develop tools and pathways that can be relevant to many educators.

EXPECTED OUTCOMES

The project partnership is working to produce tools for enhancing teachers' sustainability competences. The following outcomes are expected:

- teachers and teacher students will have ways of performing their competences in a form that is transparent and transferable – digital open badges.
- the participating institutions will have tested competence based and digital open badge driven learning pathways in teachers' sustainability competences.
- educational institutions will have materials to develop their competence-based micro-credentials on teachers' sustainability competences.
- a network of teachers who have certified sustainability education competences.
- a network of teacher education institutions with shared understanding of educators' role in the green transition and teacher competences needed.
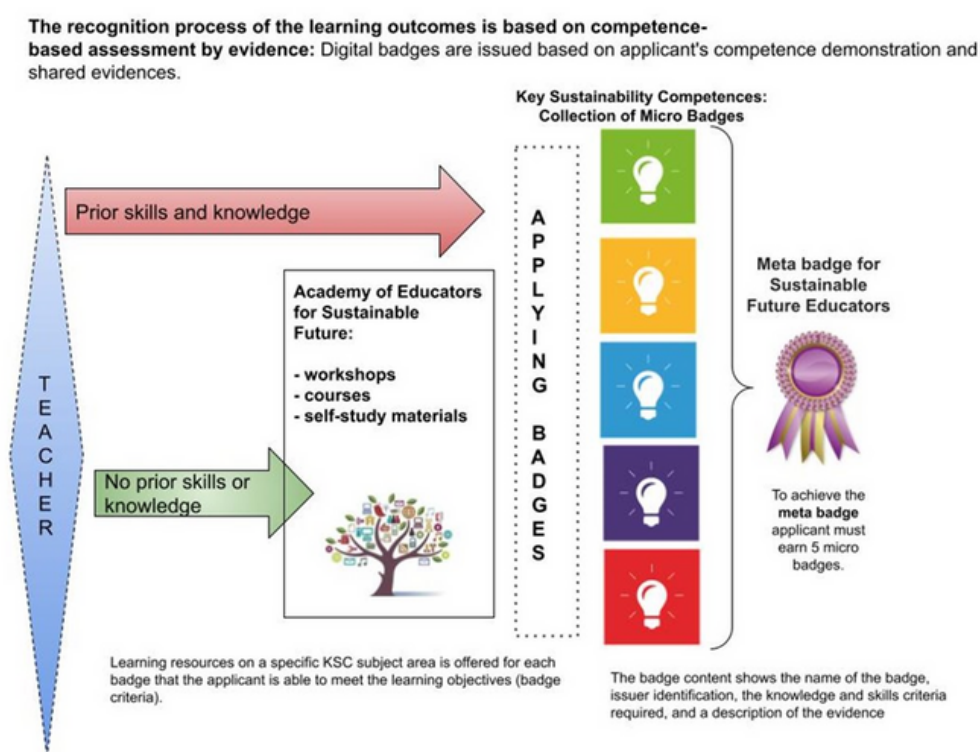- an educational offering and open digital badges-driven learning pathways.

MICRO-CREDENTIALS AND DIGITAL OPEN BADGES

- Micro-credentials certify the learning outcomes of short-term learning experiences, for example, a short course or training. They are seen as a flexible, targeted way to help people develop the knowledge, skills and competences they need for their personal and professional development.

- Credentials are owned by the learner, are portable and may be combined into larger credentials or qualifications.

- Quite often digital open badges are used as a synonym for micro-credentials. Although the two are interrelated, they are not synonymous. Open badges can function as micro-credentials. Digital open badges represent information storage tools that contain the name of the badge, the issuer, the competence objectives, the assessment criteria, competence demonstration and evidence of the badge earner's competence.

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- Badge creation and implementation can also be linked to the revision of evaluation methods and reforms of European competence classification and transfer systems, such applications as ESCO and Europass of Lifelong Learning. All this enhances the possibilities for teachers and other educators to transfer their competences throughout Europe.

DEVELOPING BADGES AND MICRO-CREDENTIALS

- EduSTA ultimately seeks to identify the education competences needed in sustainability and that can be accredited through digital open badges and recognised as micro-credentials in any country in the EU.

- Micro-credentials will be attained through small-scale modules alongside a degree education or in-service education programme.

- A key task for EduSTA is to define what teachers have to master in order to demonstrate competence. This requires identifying criteria for awarding badges. The partners are aware of the need to allow variation in the ways of demonstrating competences due to differences in national contexts and educational systems.

- A focus of the criteria will also be given to the course content and pedagogies that frame the learning modules that will be created.

- The project will support competence-based professional development through two pathways: by participating in the training (educational modules) and applying for the badge or applying for the recognition for the prior skills and knowledge through badging (competence demonstration). In both pathways the process is based on competence demonstration. The earned collection of micro badges creates a meta badge and connected badges form a EduSTA badge constellation.

- The open digital badge-driven learning pathways will be piloted in the partner institutions and by the end of the project will be open for all teachers in Europe.

- The combination of micro badges, education modules, open access learning materials and instructional guidelines are supporting digital open badge-driven learning.

The process of acquiring micro-credentials:

The recognition process of the learning outcomes is based on competence-based assessment by evidence: Digital badges are issued based on applicant's competence demonstration and shared evidences.

KEY POINTS FROM THIS CASE STUDY

Teachers are the key change makers in the education systems and can transform the learning experience so that students can be empowered to act as citizens and in the workforce to support the green transition.

Micro-credentials and the badge-based competence recognition system provide an innovative and important means of building capability of educators and motivating change for sustainability in schools.

Recognising ***prior learning of educators*** is also an important aspect of this work. Digital badging offers recognition of prior, formal, informal, or experiential learning. So, the proposed badge system will provide transparent assessment for those who feel that they already mastered certain sustainability education competences.

When developing credentials across member states, it is important to ***recognise the diversity*** of means and contexts in which competences can be demonstrated. Producing a diverse palette of educational options on teachers' sustainability competences and digital open badge-driven learning pathways opportunities is key.

KEY SOURCES

Brauer, S., & Korhonen, A-M. (2022). 360-degree view of digital open badge-driven learning. In D. Piedra (Ed.), *Innovations in the design and application of alternative digital credentials* (pp. 95-130). IGI Global. https://www.doi.org/10.4018/978-1-7998-7697-7.ch005

EduSTA. (2022, Nobember 1). https://projects.tuni.fi/edusta/

European Union. (2022, October 31). *European project MICROBOL Micro-credentials linked to the Bologna Key Commitments.* https://microcredentials.eu/wp-content/uploads/sites/20/2022/03/Micro-credentials_Framework_final-1.pdf

Korhonen, A-M., Ruhalahti, S., & Niinimäki, J. (2020). Finnish vocational teachers' competences made visible by open badges. J*ournal of Higher Education Theory and Practice, 20*(6). https://doi.org/10.33423/jhetp.v20i6.3138

Mac Lochlainn, C., Nie Giolla Mhichil, M., Wessels,O., Kiiskila, S., Pirkkalainen, H., & Palvalin, M. (2022). *ECIU university micro-credentials: A vision for European learners, values, and priorities. ECIU White Paper on Micro-credentials*.

9. THE INTERNATIONAL NETWORK OF TEACHER EDUCATION INSTITUTIONS (INTEI)

This case study is an extract from a research report entitled *"Teacher education for the green transition and sustainable development"* (2022).

UNESCO Chair
Reorienting Education
towards Sustainability

OVERVIEW

The INTEI promotes scaling up of LfS in teacher education policies, programmes and practices through international engagement and peer to peer learning. Over the last 25 years its members have successfully implemented teaching and learning initiatives and evaluated the success of various approaches in pre-service and in-service teacher education programmes.

"INTEI has broad mission and tries to deliver products that align with member needs. Some want in-service for novice faculty; others want dialogues on ESD/sustainability worldviews and help create an alternatives. It is helpful to have space for these approaches but still ensure that there is cross-fertilization of concerns and ideas."

Katrin Khol

IN ESSENCE

The International Network of Teacher Education Institutions (INTEI) includes more than 80 teacher education institutions and affiliated organisations in more than 50 countries. Members hold an institutional membership based on a memorandum of understanding.

SMALL BEGINNINGS

The network has its origins in 1998, when the UN Commission on Sustainable Development (CSD) called for UNESCO to develop guidelines for reorienting teacher training to address sustainability. UNESCO called upon the UNITWIN/UNESCO Chair at York University in Toronto to establish an international network of teacher-education institutions willing to change curriculums, programs, practices, and policies to address sustainability.

At the first meeting, the Chair used the 'Education for Sustainable Development (ESD) Toolkit' (McKeown, 2012) to create a common understanding of ESD. Participants explored ways to move forward with reorienting teacher education to address sustainability using this resource. Each institution chose its own avenues for experimentation, based on the contexts and opportunity. They kept track of their efforts in journals, chronicling successes and failures. At subsequent meetings and in reports, participants shared efforts related to reorienting teacher education to address sustainability.

FINDING COMMON GROUND

The 'Education for Sustainable Development toolkit' laid the foundation for what was to become its core function: to learn from each other by sharing experiences on how to effect change in ESD within its own member institutions. The network continues to hold regular international meetings, supplemented by national and regional gatherings with a focus on learning about innovative approaches, building research-based knowledge and identifying emerging international policy developments.

Since its inception, the Network has met in Canada, Finland, France, Japan, South Africa, Sweden, and Turkey. Membership has varied over the years growing from 30 initial TEIs to approximately 300 individual members from TEIs.

GUIDELINES GROUNDED IN EXPERIENCE

In 2005, the group developed and agreed on a survey to capture and document their efforts. The Secretariat distilled the experiences and wisdom from the efforts reported by the institutions into a set of guidelines, published by UNESCO,

The responses to the surveys showed that members of the international network undertook many types of initiatives in their efforts to reorient teacher education to address sustainability in their home institutions, subregions, nations, and internationally. Their efforts influenced programs and policies within their institutions in locally relevant and culturally appropriate ways.

The guidelines and recommendations emerging from the INTEI informed the work of UNESCO regarding teacher education for sustainable development. Members of the network facilitated workshops and mentored others in initiatives convened by UN regional offices.

INFLUENCE AND IMPACT

Using the results of the survey, Rosalyn McKeown identified ways in which INTEI members, working within their spheres of influence had created and implemented one or more of the following types of activities in their own institutions:

Curricular / Programme Development:
- Developed graduate level programmes at Masters' and doctoral levels in ESD.
- Developed a compulsory ESD course for masters' programmes in geography and environmental education.
- Established advanced certificate programmes in ESD.
- Established distance education courses in ESD.
- Established an environmental education concentration in the College of Education's Masters' Degree in Curriculum and Instruction.
- Established short in-service courses for teachers.
- Reviewed and revised existing courses to address sustainability.
- Infused ESD into all math, science, geography, and technology courses.
- Infused ESD into other disciplines at undergraduate and graduate level programmes such as agriculture, population education, and consumer education.
- Initiated programmes with Women's Studies, Women in Society, Women in Agriculture, and Women's Literacy.
- Devised an ESD project using literature and language arts at the secondary school level to address male youth violence and to deliver skills in conflict resolution.
- Launched an Aboriginal Studies programme with a focus on ESD and traditional ecological knowledge.
- Assisted in infusing the concepts of sustainability into dissertations and graduate research as an option.

Pursued research projects in ESD Institutional Change:
- Formed Institutes and Centres for Sustainability Education.
- Formed institution wide ESD committees and discussion groups.
- Launched a Cyber-Environment Education Institute.
- Developed ESD internships for students from other countries.
- Established an interfaculty research institute on innovation and sustainability.

Faculty Professional Development:
- Pursued European Union funding for faculty training in ESD.
- Developed interfaculty exchanges related to ESD among universities.
- Established a national ESD professional development consortium.
- Held institution-wide, national, and international conferences and workshops on ESD.
- Launched an international peer reviewed journal on ESD.
- Initiated practical and theoretical research projects leading to publication of articles and books.

Networking:
- Formed four international regional networks of faculties of education related to ESD and reorienting teacher education, which involved approximately 70 faculties.
- Established an ESD link with schools in another country.
- Developed a regional strategy for ESD.
- Established a language based ESD network in Europe and the Americas in English, Portuguese, and Spanish.

Partnerships/Community Service:
- Formed partnerships with local / regional government and nongovernmental organizations (NGOs).
- Developed recognition programmes for schools and institutions that promote ESD (e.g. green school movement).
- Formed Sustainable Business Partnerships to promote ESD.
- Undertook research on infusing ESD into teacher education on a national level.
- Engaged geographic information systems and other information technology approaches to monitor community sustainability issues.
- Developed community-based off-campus teacher education projects within the inner city to improve the delivery of schooling to undereducated youth.
- Formed regional ESD curriculum-writing teams.
- Developed links between the faculty of education and the school of business to co-develop professional development programs on ESD for senior level education administrators.
- Produced manuals, texts, websites, and other sustainability teaching resources for elementary and secondary schools.
- Translated key ESD materials, including the 'Education for Sustainable Development toolkit' website, into local languages.

Advocacy and Promotion of ESD:
- Raised the level of awareness of ESD through many activities by writing journal articles and popular press materials; giving media interviews, lectures, and presentations at conferences; contacting academics and educators in many disciplines; and speaking with higher-education administrators around the world.
- Delivered copies of Agenda 21 to all faculty members in the six largest regional universities.
- Designed programmes to model ESD practices within an institution.
- Produced sustainability demonstration sites that address energy conservation, organic agriculture, wastewater treatment, etc.
- Participated in a national committee to rewrite teacher education certification requirements.
- Used the Earth Charter as a framework for the development of presentations and workshops.
- Promoted the concept of the ecological Handprint with the Centre for Environmental Education in India since 2003.

UNESCO PARTNERSHIP

Based on the outcomes from member activities, the UNESCO Chair was able to successfully advocate to prominently position teacher education on the UNESCO ESD agenda.

Following this early work, the INTEI became a Key Partner in the UNESCO Global Action Programme on Education for Sustainable Development (2015-2019).

INTEI also benefited greatly from its association with this international agency which gave it the convening power, attracting teacher education institutions to the network and enabling to share its experiences widely.

A STREAMLINED NETWORK IN 2020

Over the years, INTEI had both grown extensively to 300 individuals in over 70 countries with many individuals engaged not always representing their institution. Trying to raise the funds for such a large group to meet at the biannual INTEI meeting was prohibitive. Thus, in 2020, the network underwent a quality improvement process based on a member survey and an in-depth network analysis. This review led to a streamlined network as formal involvement became limited to TEIs that were willing to declare their institutional commitment by signing a memorandum of understanding at the leadership level and defining concrete focal points to participate in the network.

Another outcome was a strong interest from members to refocus on global research projects. With a smaller group of 80 institutions spanning 58 countries, it will now specifically serve the research needs of the new UNESCO ESD for 2030 Framework with its 10-year Roadmap. With the involvement of the leadership level at each institution, members reported that interest and awareness and the willingness to create active involvement in the network had considerably increased.

KEY POINTS FROM THIS CASE STUDY

Ongoing communication within the network keeps members connected and up to date on member activities, opportunities to attend relevant events, recent publications, and assists their tackling the hard questions and tasks associated with reorienting teacher education towards sustainability.

Its *association with an international body* gave the Secretariat the convening power to establish the network. INTEI's publications including the guidelines document had greater reach as a result of this affiliation. The Secretariat confirms that its ability to continue to exist for the last 25 years is due in part to the sustained connections with UNESCO which enabled it to platform its experiences as an advocate for change in teacher education.

Key to its success was its *broad mission and giving the freedom to members to explore their interests.* Some want in-service for novice faculty; others to explore ESD/sustainability worldviews or discuss philosophical approaches. It is helpful to have space for these approaches but still ensure that there is cross-fertilisation of concerns and ideas.

Other than some *very limited travel support* for members from the South to travel to the biennial meetings, no funding from the convener or the Network was provided to the members to support their activities. The assumption was that funded pilot programmes would not be replicated and that success stemming from personal initiative and internal allocation of resources would have a longer lasting impact.

The *quality improvement processes* supported a renewed commitment and a common sense of direction for members. While it is sometimes challenging to create buy-in from leadership, the network is overall stronger with institutional members than with individual memberships. The process of review and adaptation kept the project fresh and relevant over time.

More recently, INTEI has joined UNiESD&ST, a UNESCO UNITWIN initiative to strengthen teachers as key actors in promoting sustainable development. This **multilayered approach** has proven to be very successful in positioning teacher education in various ongoing discussions at UN level. This has helped the network with its advocacy goals as it continues to influence not just within their own institution or sector but also international policy.

Lessons have been learnt about how to effect change in initial teacher education programmes. INTEI highlights the importance of **aligning ESD with existing priorities of the faculty** and the individual faculty members, and of overcoming perceptions that ESD is an additional burden or add-on. Another key recommendation is to ensure that the university leadership understands ESD conceptually and sees an advantage in pursuing its inclusion.

KEY SOURCES

Hopkins, C.A., & McKeown, R.. (2005). *Guidelines and recommendations for Reorienting teacher education to address sustainability. Education for Sustainable Development in Action Technical Paper no. 2.* UNESCO.

Hopkins, C.A., & Kohl, K. (2019). Teacher education around the world: ESD at the heart of education - Responsibilities and opportunities towards a sustainable future for all. In D. Karrow, & M. DiGiuseppe (Eds), *Environmental and sustainability education in teacher education. International explorations in outdoor and environmental education.* Springer. https://doi.org/10.1007/978-3-030-25016-4_2

McKeown, R., & Hopkins, C. (2007). International Network of Teacher Education Institutions: Past, present and future. *Journal of Education for Teaching: International research and pedagogy, 33*(2), 149-155.

McKeown, R. (2012). *Education for Sustainable Development Toolkit, version 2.* http://www.esdtoolkit.org

UNESCO (2022, August 20). *Teaching and Learning for a Sustainable Future.* https://webarchive.unesco.org/web/20170509192615/http://www.unesco.org/education/tlsf/mods/theme_gs/mod0a.html