Input Paper: A Whole School Approach to Learning for Environmental Sustainability

Contents

1

01

Introduction

1. Introduction

This input paper has been prepared to inform a meeting of EU's Working Group Schools - education for environmental sustainability.

The Working Group brings together government representatives and education stakeholders[1] from the EU, and partner countries, to support closer collaboration on education for a green transition. It will follow the new Council recommendation on learning for environmental sustainability[2] and promote exchange and mutual learning that can promote education for a more sustainable Europe.

The first meeting of the Working Group is to take place virtually between the 31st of January and the 1st of February 2022 and will focus on the thematic of a whole school approach to sustainability. This theme was identified following a survey of Working Group members who were asked to name priority themes for the working meetings. The survey showed that members were keen to give preference to a whole school approach to sustainability and in the context of 'student engagement'; 'leading change in school'; 'awards and schemes'; 'partnerships'; 'living sustainably at the school' and 'self-evaluation'.

This paper asks the question: 'what has been learnt from the adoption of whole school approaches to sustainability? It addresses this question by summarising the latest research and leading experiences with the objective of informing policy development and related activities. It also gives a focus a selected number of the subthemes identified in the survey which are of interest to Working Group members.

2. Background: Policy Context

In 2019, the European Union adopted a set of policy initiatives commonly referred to as the *Green Deal*[3] that seeks to transition Europe towards a more sustainable and climate safe future by 2050. The contribution of education and learning to the transition is recognized by this commitment as well as by policy and strategic announcements that followed.

Significantly, the *EU Biodiversity Strategy for 2030*[4] and the *Communication on the European Education Area*[5] announced that a new policy initiative on learning for environmental sustainability would be released to encourage political commitment to the green agenda as well as increased cooperation across the region. The European Commission's proposal for a Council recommendation[6], released in January 2022, builds on existing policies and further defines how education and learning can contribute to a green transition. This high-level statement, now under discussion by EU Member States, is informed by the perspectives of government, civil society as well education stakeholders who called for learning programmes, qualifications and experiences offered by schools, training and vocational institutions and universities to be reframed to address sustainability[7].

The calls for change extend to beyond teaching and learning as persuasive arguments and evidence is presented as to why education environments (and institutions) must themselves also become environmentally sustainable. The Staff Working Document or 'handbook'[8], that accompanies the recommendation, acknowledges that a *whole school approach* to sustainability lies at the heart of learning for environmental sustainability but also that action is needed to mainstream and support the effective implementation of such approaches*.*

A whole school approach to sustainability in education is also supported by other international frameworks such as *UNESCO ESD2030*[9] which sees it as critical to the attainment of sustainability in learning and education environments. Similar commitments are made in the *Berlin Declaration on Education for Sustainable Development* (2021)[10] and the *UNECE ESD Strategy Concept Note (2021)*[11]*.*

03

A whole school approach

3. A whole school approach

A whole school approach to sustainability seeks to embed learning for environmental sustainability across the institution. It adopts a systemic view of education creating opportunities for ***living and learning sustainability*** across the education environment*.*

Schools adopting this approach connect what students learn through the curriculum with what is practiced by the school through its management, operations and procurement as well as outreach. It is an approach that seeks to take learning outside of the classroom walls by engaging students in school decisions, involving them in community projects and global initiatives. It also encourages partnership engagement from community groups involving students in real-life experiences and actions for sustainability.

The aim is to establish a *culture of sustainability* across the school thus extending the contribution of individual champion teachers who are seen to be engaging in islands of good practice[12]. Instead, a *whole school approach* brings environmental sustainability to the heart of the school, college or university and provides a space for living sustainability (see Figure 1).

Figure 1. A whole school approach to sustainability. UNESCO (2016)

Often, the terms '*whole school approach*' and '*whole of institution*' approach are used interchangeably.[13] Although the latter is seen to be more relevant to further and higher education settings, it equally encompasses mainstreaming sustainability into all aspects of the learning environment to include the wider social system within which the school is located.[14] The term 'sustainable school' is also associated with a *whole school approach* given the common pursuit of a connected view of sustainability across the school and community. It also strives to practice as well as teach sustainability.[15]

Essentially, bringing sustainability to the heart of a school means embedding sustainability in: ***governance*** (e.g. mission statements; key guiding frameworks; monitoring progress); ***teaching and learning frameworks*** (e.g. cross-curricular projects; assessments; action learning); ***campus and facilities management*** (e.g. reducing waste and their carbon footprint; providing green and healthy school grounds); and ***catering*** (e.g. providing healthy and sustainably sourced food). It all seeks ***cooperation with the broader community*** joining efforts in establishing projects that help the transition to sustainability (e.g., regenerative cafes; community allotments) and in transforming the school environment into a sustainable learning space.[16] Some schools have retrofitted their buildings to align with sustainability whilst others have invested in technology that helps them generate their own energy to become more sustainable.[17] The agenda is transforming how schools are operated and managed and beginning to influence how sustainability is taught and learnt across the school.

A *whole school approach* recognises that schools do not exist in isolation but can be the focal point of a community. Initiatives that involve parents, neighbours and associated partners form part of this approach and can extend engagement of communities in sustainability. Equally, staff and students learn from the experiences of the local and global community in sustainability and form partnerships to bring about changes in school learning practices.

This approach to education is not simply about connecting the various aspects of the school so that they align to sustainability; it is also about redesigning the student experiences so that they can meaningfully develop mindsets and competences that enable them to contribute to sustainability.[18] It requires adopting new teaching and learning approaches which promote student engagement in real life scenarios as well as connecting them with decisions and actions relating to the school environment.[19] For example, a school can adopt a *whole school approach* to sustainability in relation to food connecting all aspects of the school experience (see Figure 2).

A key difference between a *whole school approach* and common approaches to sustainability is that the schools recognise that students learning is not limited to the formal curriculum.[20] Instead, schools acknowledge that the 'hidden' curricula is a powerful way of engaging learners in change and that its alignment with sustainability is necessary to support the principle of '*living what they learn*'[21]. It is also believed that this more integrated and empowering approach can help replace a sense of fear and powerlessness with a pedagogy of hope and action when facing sustainability issues.[22] Core questions that be asked by a school team to establish if a school has adopted a *whole school approach* to sustainability (Figure 3).

It is also worth noting that a *whole school approach* is equally relevant to other areas of educational interest (such as digital education or gender mainstreaming) and has a long tradition of supporting schools as learning organisations. Indeed, there many reports and documented experiences in these areas that can also support the advancement of learning for environmental sustainability in schools.[23]

Figure 2. A whole school approach to sustainability: Food. Tilbury (2019)[24]

We are a Sustainable School ….

We grow food and have our own soil patches and planters to show how we can make a difference to our community, reduce our food miles and lead healthy lifestyles.

1. Students are **growing their own food** in school gardens and learning for sustainability in the school grounds; some of the food grown is used in the school canteen.

2. The school is **creating awareness** by labelling food options in the canteen menu so that students are aware of the environmental impact of their choices;

3. School management have partnered with suppliers, caterers and canteen staff so that food offered is in season and can be locally sourced **lowering their own carbon footprint**;

4. Staff and students are working with **local charities to reduce food waste** and redistributing food left overs from the canteen to those in need.

5. Teachers highlight sustainability issues related to **food through the taught curriculum** (geography, art, literature, religious studies*).*

6. *Students explore visions of the **future of food** and discuss this with their guardians and parents at home.*

7. *With the support of a local NGO, students, parents and staff **establish and manage a bee hotel** to support local bee populations and learn the importance of insects in pollination, food security and to agricultural communities.*

Figure 3. A whole school approach to sustainability: Core questions. Tilbury (2021)[25]

We are a Sustainable School ….

Our Green Roof provides insulation and reduces energy consumption rates, creates a habitat for wildlife and provides a more aesthetically pleasing landscape. In class, we learn about green retrofitting and what we can each do to combat climate change

In summary, when a school adopts *a whole school approach* to environmental sustainability, it questions:

Q. **What** is taught (curriculum; hidden curriculum)? ;

Q. **Where** does learning take place (classroom- school buildings -campus- community)? ;

Q. **Who** do we learn from (teachers - school staff parents - partnerships)? ;

Q. **How** is learning taking place (action learning; participatory learning; critical reflective learning; values clarification)?

Q. **Is there** a culture of sustainability? Can staff, students and wider community **see the alignment** between the *what*; *where*; *who* and *how*?

04

The adoption of a whole school approach to sustainability

4. The adoption of a whole school approach to sustainability

The notion of a *whole school approach* to sustainability has been around since 1992[26] with numerous schools, colleges and universities developing relevant experiences as they seek to become more sustainable. Much has been learnt as educators have pushed boundaries, rethought educational experiences and built upon good practice. These learnings have been documented by case studies, critical reflections, peer reviews, formal evaluations and research studies.[27] Insights into these experiences point to critical factors that influence the success or effectiveness of a *whole school approach* to sustainability as well as confirm challenges which have persisted over time.

4.1 Key factors that influence the success of a whole school approach

A whole school plan. Research suggests that the process of developing a whole school plan is as important as having one.[28] The plan is to be developed in an inclusive manner so that it becomes a learning opportunity in itself. The process of involving students, staff, parents, partners and community stakeholders increases ownership and the likelihood of its being implemented. Successful processes also involve external facilitators and are accompanied by professional development opportunities. As would be expected, establishing self-monitoring and review processes also increase the effectiveness of a *whole school approach*[29]. The latter are kept under review by the relevant governing body.

A future-oriented perspective. Not all whole school plans for sustainability go to the heart of the organisation's identity or values. Developing a vision for the school will make the plan more impactful and locate sustainability at the core of the school's identity. Equally, research studies document how futures-oriented perspectives in teaching improve motivation of students, address eco-anxiety, provide hope and empower students to take engage in sustainability action.[30] The work of David Hicks[31] offers research evidence as well as practical learning activities to assist with the adoption of futures-oriented perspectives. This area of work is receiving increasing attention by schools, colleges and universities as it becomes apparent that this is not only a key distinguishing factor between environmental education and the newer education for environmental sustainability approaches but also because it also the least understood in practice.[32]

Students getting hands on experience. Many refer to this as action learning and most opportunities tend to focus on problem solving and experiencing collaborative learning tasks. A three-year study involving primary and secondary schools was undertaken by the UK inspectorate and was concerned with learning standards assessed learning effectiveness in sustainability.[33] Research showed that pupils learnt best when they were given an opportunity to learn in practice inside and outside the classroom and if they were able to investigate, plan and carry out actions that made a difference to the school or their community. Teachers in the schools considered that this change in pedagogy had improved learning effectiveness, students' exam results as well as motivation to learn. A more recent consultation study, with educators and education stakeholders across Europe, restated the need for learning in sustainability to be hands-on but also identified that the COVID-19 pandemic had set back plans to extend these approaches across the school curriculum.[34]

Embracing complexity and not just problem solving. Education for environmental sustainability recognises that more complex social and economic issues underpin environmental quality, biodiversity, climate change and other sustainable development issues. This requires citizens to have skills in critical enquiry and systemic thinking to explore the complexity and implications of sustainability.[35] Numerous studies have been undertaken to explore how this can be done and also taught in initial teacher education and in ways that go beyond problem-based learning.[36] OECD, for example, uses the metaphor of a learning compass to emphasise the need for students to learn to navigate themselves through unfamiliar contexts critical to promote student or learner agency. It has developed a guide to support schools and teachers as they reposition learning in this way.[37]

From *Environmental Education* to *Learning for Environmental Sustainability* Traditional approaches to environmental education view students as needing to experience positive encounters within the environment to appreciate and protect the environment.[38] At the same time, it has been increasingly recognised through

research and educational literature that awareness raising and experiences in nature is not sufficient in itself to lead towards a more sustainable future.[39] Education experts suggest that approaches which educate *'about'* and *'in'* the environment and dominate curriculum practice must be extended to educating *'for'* environmental sustainability if a *whole school approach* is to be effectively practiced.[40] The latter, seeks to engage people in critical reflection of current lifestyles and of actions, both collective and individual, so that they are able to make informed decisions and changes towards a more sustainable world.[41] They promote a shift away from traditional approaches to environmental education and recognise the need to redefine not only the learning but also the role of schools and their relationship with the community. This requires a significant change in focus beyond 'what to teach students' and 'how they are behaving' to seeing schools as a focal point where children, adults and the community interact and learn together for sustainability.[42]

Distributed leadership. This is seen as critical to model effective implementation of *a whole-school- approach* as it increases participation of all involved in education.[43] Education leaders that support shared leadership involve teachers and learners in designing, planning and action taking across the school.[44] This style of leadership often termed 'distributed leadership' contrasts with the 'heroic' style or 'champion' approach to leadership and is considered more effective and durable in the context of sustainability.[45] Developing a shared vision of a sustainable school helps foster a sense of ownership; this in turn enhances motivation and deepens the focus on the attainment of a *whole school approach* to sustainability.[46] It also creates participatory learning opportunities for staff and students acknowledging the need for continuous learning by all in this process. The above aligns with the conclusions of a study undertaken in rural, suburban and urban schools where learning for environmental sustainability had a higher profile and was considered to be effective.[47]

4.2 Key challenges to a whole school approach

Initial teacher education: The uptake of a whole school approach is dependent on teachers who are knowledgeable about sustainability and have the capacity to implement it through a school-wide approach. Although countries, such as Estonia, are beginning to introduce a whole school approach to sustainability in initial teacher education, training experiences to date in many countries have been limited in opportunity and quality.[48] This was a problem first identified in 2006[49] with recent research[50] indicating that the issue still persists. The latter suggest that teachers in initial training, may learn about sustainability in science, geography, or studies of society and environment curricula but not about how to address this as a whole school experience. Sustainability does not feature in educational leadership, management, psychology or sociology classes thereby limiting the potential for school wide implementation.[51] Numerous frameworks have been developed to address this critical issue but none have been used to date to frame national policy in this area.[52]

Lack of resources and/or expertise: A recent European study identified the lack of resources and expertise as a key challenge to the implementation of a *whole school approach*[53]. This finding adds strength to commentators claims that efforts are hampered by limited specialist skills and funding to retrofit school buildings as well as by the lack of technical support and access to technological resources to support new energy generation initiatives in schools.[54] Partnerships with NGOs and corporate sector bodies may provide pathways to solving this particular challenge. The UK draft strategy '*Climate Change and Sustainability in Education*' is proposing this partnership solution to upscale the adoption of environmental sustainability in schools.[55] Financial support is also needed to bring about changes to teaching and learning approaches more widely. Funding for professional development opportunities for teachers is important to support the adoption of innovative learning methods. Similarly, field visits for students and outreach activities often requires dedicated funding.

Working as a team across the school: Working as a team towards a common goal, can prove particularly challenging when staff (teaching; support; leadership) have different levels of understanding in relation to learning for environmental sustainability.[56] This makes it is difficult to develop coherent educational experiences for students across the school. For example, some leaders may focus their efforts on a one a year collection of litter campaign and see this as the school's contribution to sustainability; whilst others staff members may give a focus solely on planting trees in the school yard or limit their efforts to encouraging students to walk to school. These discrete activities are valuable but not sufficient to attain a *whole school approach* to environmental

sustainability.[57] Colleagues may not appreciate the importance of connecting these action experiences to the building of learner competences in this area or to the broader goal of becoming a sustainable school. Equally, the lack of opportunity for teachers to collaborate or lack of support or time to sustain this collaboration may also be influencing factors. In addition, staff will have competing demands on their time especially given recent priorities; such the pandemic and the disruption it has brought to schools. These factors complicate the implementation of a well-supported approach to addressing sustainability across the school.

It is important to recognise that there are likely to be different motivation and engagement levels across the school team. It is, in these instances, where clear leadership from the school's principal or governing body is vital so that attention can be directed to this commitment and connections made between action taking, the building of learner competences and the focus of providing a lived experience of sustainability across the school. A lack of direction or commitment from the leadership team can result in teachers and support staff taking on heavier work loads which adds further obstacles to the adoption of a *whole school approach*[58].

05

Interests of the Working Group Schools – education for
environmental sustainability

5. Interests of the Working Group Schools – education for environmental sustainability

The focus of this input paper was identified following a survey of Working Group members who were asked to name priority themes for the working meetings. The survey showed that members were keen to focus on a *whole school approach* to sustainability and in the context of other subthemes. This section takes a closer look at the latest research and briefly summarises the experience in relation to a select number of subthemes that have had limited coverage in the initial part of this paper including: 'student engagement'; 'leading change in school'; 'awards and schemes' and 'living sustainably at the school'. It identifies key questions that Working Group members may wish to investigate further in future sessions.

5.1 A whole school approach at policy level

A whole school approach to sustainability is present in some national policies as well as embedded in international strategies or frameworks which have a focus on education for sustainable development.

The Dutch government's 'DuurzaamDoor'[59], (2021) strategy for education, for example, focuses on five thematic areas: biodiversity, food system, circular economy, energy and climate, as well as water. It identifies a *whole school approach* as a key cross-cutting theme which supports '*integral decision-making for sustainability*'. The strategy aligns with the UNESCO 2030 Roadmap[60] and is seen as key contribution to the global effort to mainstream climate change and sustainability into education.

The UNESCO Associated Schools Programme adopted a *whole school approach* as a policy priority across its 11,700 schools in support of the UNESCO *Global Action Programme*[61]. The German Commission to UNESCO, in turn, supported this policy measure by prompting adoption across the 300 ASPnet schools[62]. The Canadian Commission for UNESCO equally embraced this approach involving its schools in the adoption of this policy.[63] The policy recognised the **transformative edge of this approach which** mobilises members of the school as well as partners and communities. This work, alongside a recent study on policy frameworks for sustainable schools[64], calls for a wider adoption of a *whole school approach* across Canadian schools.

The recently released UK government strategy on climate change and sustainability for education[65] does not use the term 'whole-school' to describe its approach but provides a comprehensive plan for supporting the embedding of climate change and biodiversity education across the school estate, operations and supply, teaching and learning as well as career development opportunities for young people. It relies heavily on community engagement as well as partnerships with the building sector to attain its vision.

The UNECE 2021-2030 draft strategy on Education for Sustainable Development adopts a whole of institution approach to sustainability and aligns with how many of the schools and core literature have defined or engaged with a *whole school approach* over the years. It seeks to give priority to initiatives and resources in this area over the coming five years.

Interestingly, no research was found on the policy drivers to a whole school approach to environmental sustainability.[66] Equally frameworks for assessing or evaluating national government policies in this area appear to be absent.

Questions which might merit further consideration:

Q. What policy drivers support the embedding of these approaches in schools?

.

Q. How can actions, at policy level, support innovation and organisational change at school level?

Q. What impact would having sustainability as part of school inspection or self-evaluation policy have on a whole-schole approach?

Q. Are there differences between policy and implmentation at primary and secondary level? What can be learnt from higher education or other sectors?

Q. What experiences can be shared between members of the working group regarding the effective embedding of environmental sustainability into national policies and plans.

Q. Is there a need to develop a framework specifically for policy development or evaluation in relation to a *whole school approach* to environmental sustainability?

Figure 4. DfE 2021 Climate change and sustainability strategy for education
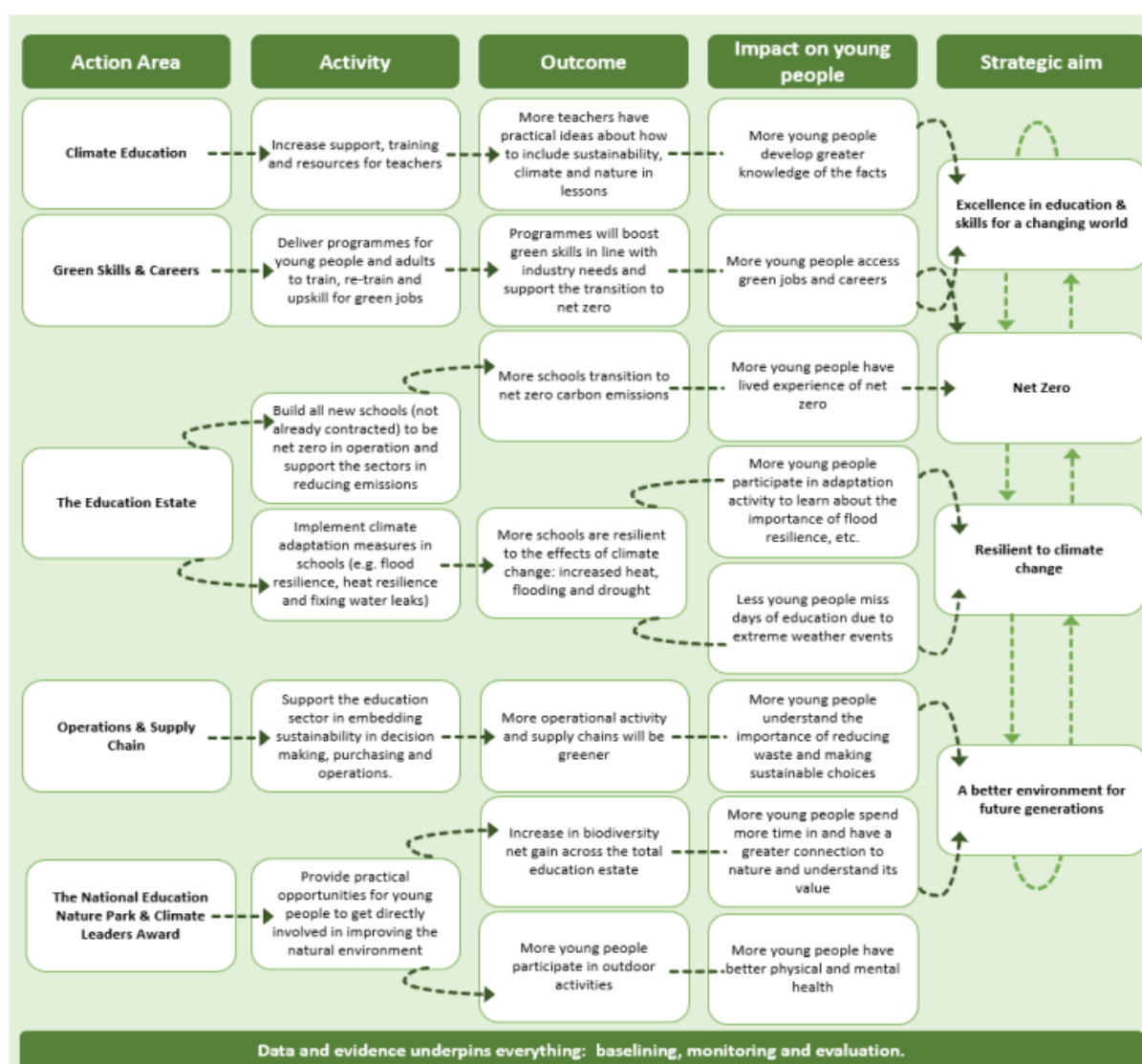
5.2 A whole school approach and student engagement.

Creating opportunities for student engagement in sustainability is seen as key goal of a *whole school approach* to sustainability.[67] Several policy documents acknowledge the importance of student engagement in the attainment of environmental sustainability in schools. It is also the focus of many teacher dialogues and academic conversations in this area. In particular, there is a call for learning that engages students with real world issues, reframes teacher-learner relationships, promotes participatory learning and embeds responsibility as a learner outcome.[68] These go beyond the narrow interpretations of student engagement which require students to work in groups or carry out a project or collect litter in a local area (see figure 5). The new engagement opportunities have a transformative edge which questions: what students already know; who they can work with to further extend their understanding or experience; how they wish to respond to issues; and, what action, if any, they would take.

Figure 5. Student Engagement

Traditional definitions of student engagement refer to the degree of responsiveness (attention, curiosity, optimism and/or passion) that students show when they are learning or being taught.

Student engagement in the context of a *whole school approach* draws attention to the power threads in teaching and learning as well as to authentic participation opportunities where students can inform and influence the direction of an activity. In this sense, student engagement is about student empowerment and supports the development of student competences and engagement in change. Schools that have opportunities for students to participate in School Councils and inform school decision-making are taking steps to embed student engagement at the heart of the school.

IUCN proposed a framework for learner engagement in sustainability, mostly suitable for secondary, college and university students. This involves opportunities for envisioning, critical reflective thinking, values clarification and, participation in decision making.[69] It provides tangible examples of how this can be done in practice. Equally, Hicks[70] work presents engagement activities in sustainability with rationale that explain the educational value and importance of these at the attainment of environmental sustainability.

A recent development is the realisation that activities must focus on empowerment and presenting real life decision-making processes rather than on behaviour change or attitudinal shifts that focus on pre-determined outcomes. The latter are interpreted by some as manipulative and going against an educational development ethos arguing that they do not want their children to be educated 'for' sustainability.[71] There is also concern that a focus on environmental science and knowledge at the expense of engagement opportunities has led to increase in eco-anxiety in young learners.[72]

Questions for further consideration:

Q. How can the school's core activities be redesigned so that student engagement becomes a core organising and learning principle of the school?

Q. How can student engagement help address eco-anxiety in young and adult learners and what are the implications for policy frameworks?

Q. What experiences can be shared between members of the working group regarding student engagement experiences which can inform policy development in this area?

5.3 A whole school approach and leading change in schools

There are a significant number of studies connecting sustainability to change leadership and effective leadership in schools, colleges and universities. It is beyond the scope of this section to present a summary of this work; instead, the text below points to some areas of potential interest to the Working Group.

A recent European study suggests that the absence of leadership from the school management as well as a reliance on the motivation of individual teachers without sustained support from management can make *a whole school approach* difficult to implement.[73] The absence of direction or support creates pressure on committed staff who experience workload issues. These result from the additional commitments of creating school wide organisational structures necessary for the adoption of this approach.

School organisation is one of the most crucial facilitators in the implementation of a *whole school approach* to sustainability.[74] School leadership teams have the responsibility of creating a vision for a sustainable school, establishing standards for quality education but also of supporting school organisational structures that enable a *whole school approach* to sustainability.[75] A recent Swedish study suggests that leadership teams which establish these structures as well as support an interdisciplinary stance to learning for sustainability provide the best leadership models for a *whole school approach*[76].

The work of Michael Fullan and Geoff Scott is perhaps the most comprehensive in terms of understanding change leadership in schools and embedding sustainability across an institution. They frame the concept of 'turnaround leadership' and define the 'learning principal' as well as the broader processes that support effective leadership for change in educational institutions.[77]

Also relevant to this subtheme is an understanding of what motivates leadership teams to embrace a whole-school approach. Findings from an action research project indicates that the willingness of school leaders to engage with sustainability depends on whether learning for sustainability is understood as an additional educational perspective or a vehicle to deliver generally increased quality in education.[78] Notably, leadership training for school teams is not often available or a priority; not just in sustainability but more generally.

Questions for further consideration:

Q. What do empirical studies undertaken to date suggest are the key factors that influence effective leadership for a *whole school approach* to sustainability?

Q. Can the principles for effective leadership of a *whole-school approach* be identified?

Q. What evidence exists that there is a relationship between quality of education and a *whole school approach* to sustainability?

Q. What national experiences and studies can be shared between members of the working group regarding leadership and change management in schools in this area?

5.4 Awards and schemes supporting a whole school approach

There are multiple sustainable school awards and accreditation schemes in existence.[79] All promote an institution-wide adoption of sustainability. Best known in Europe is the Eco-schools programme which has been adopted and adapted across the region. In Denmark, for example, there are around 200 eco-schools identified as the Green Free School (Den Grønne Friskole) which have been built or retrofitted with sustainable principles and seek to bring eco-pedagogy to the core of teaching and learning experiences.[80]

The recent *Global Search for Sustainable Schools*[81] is a programme and award scheme involving nine countries that are seeking to transition schools to sustainability. The programme has a school focus on student

engagement and on asking students to submit plans for making their schools more sustainable. The national coordinators of the programmes are supported by a group of international experts and a series of professional development workshops.

In New Zealand, the *Enviroschools* programme has been successful in promoting an environmental action-based programme where young people design and lead sustainability projects in their schools and neighbourhoods. Their Fairhall School, for example, sees students leading the re-habitation of bushland, replanting native species and involving parents and other members of the community in the protection of biodiversity around the school. In turn, teaching staff and coordinators have been developing new curriculum learning initiatives around these activities.[82]

Numerous reports exist to document the value and limitations of each scheme and award.[83] UNESCO is currently undertaking a study that will capture and review the latest evidence to inform decision and policy making in this area.

Questions for further consideration:

Q. What characteristics of these awards and accreditation systems contribute to the effective transitioning to environmental sustainability learning and practice?

Q. What are the initial findings of the UNESCO research in this area?

Q. What experiences can be shared between members of the working group regarding the different accreditation and awards schemes?

5.5 The school as an example of living sustainably

It is generally accepted that seeking to provide a lived experience of sustainability in school is a core goal of a *whole school approach*. Detailed visions exist of what this could look like in practice and considerations have been given to the school estate and grounds, operations, catering and management of schools as well as the design of learning spaces so that they align these visions. However, implementing this ideal is a challenge as school projects that seek tangible changes in school or the community are mostly disconnected from the core curriculum or learning experiences of students. In addition, the ties between the various components of the school experience can be implicit and it is often left to the learner to make the connections between living and learning sustainability.

Schools have sought to address this through cross institutional planning and regular review meetings to ensure that there are close ties are made between the various aspects. Communication boards and signage across the school to remind students that there is a connection between learning and school practice have also been adopted.[84] Corporate and community partnerships are equally important to the attainment of a school that 'lives and breathes' sustainability in practice.

Questions for further consideration:

Q. What strategies and initiatives have been adopted to advance the goal of living sustainably in school?

Q. What experiences can be shared between members of the working group regarding living sustainably that can inform policy development in this area?

06

Final Observations

6. Final Observations

This paper asked the question: *'what has been learnt from the adoption of a whole school approaches to sustainability?'.* It has identified critical success factors, lessons learnt and challenges which have persisted over time. In drawing conclusions, it turns to a study conducted over 15 years ago. In 2006, Henderson and Tilbury were commissioned by the Australian government to review a number of nationwide, whole-school initiatives which were exerting influence across the globe.[85] They were asked to compare experiences and achievements as well as critical success factors. The study found that some programs were documenting deep levels of change resulting in cultural shifts within schools and the wider community; whilst others were attempting to connect strands that did not align with a core vision, exhibited contradictions and had limited influence externally. The researchers concluded that effective whole-school approaches were:

• **relevant -** to school's mission; national educational priorities; community identity; as well as, environmental priorities of the region.

• **resourced** - with expertise and support in sustainability and learning for sustainability; physical resources and technologies to make the transition; and, medium-term finance to execute plans.

• **reflective** - skilled in critical reflection and evaluation at all levels; developed critical thinking competences in its staff and students; striving to become a *learning organisation*.

• **responsive** – embraced a flexible structure and adapted to local and cultural settings; developed learner capabilities that helped recognise complexity as well as the changing nature of sustainability challenges and rejected a one size fits all approach to sustainability.

• **reformative** – appreciated that the agenda is not simply one of adding on environmental or SDG themes to the curriculum but that of reframing the entire educational experience.

Fifteen years on, the '5 point' summary continues to be relevant. This suggests that although we have since learnt the importance of this agenda and built a bank of experiences, the same principles of good practice as well as challenges remain. To mainstream this approach, consideration should be given to these five 'rs' when planning, framing or engaging with *a whole-school approach* to sustainability.

It must also be recognized that in 2022 that there is a new policy context which provides opportunities for greater European and international co-operation and moving forward together to improve the adoption of a *whole-school approach*. The new European Commission recommendation on learning for environmental sustainability and its accompanying handbook can provide a catalyst for this change. There now exists the experience as well as fresh opportunities to extend and deepen the adoption of *a whole school approach* to sustainability at a national and regional level.

7.

8. References

1. Aikens, K, McKenzie, M., Vaughter, P. (2016). *Environmental and sustainability education policy research: a systematic review of methodological and thematic trends*. Environmental Education Research, 22:3, 333-359, DOI: 10.1080/13504622.2015.1135418 .

2. Appleby, D, Watabe, A, Gilby, S, Babikwa, D, Bergraff, H., Bun, E. Conselherio, D., Duishenova, J., Kantika C, Thuy Ngoc, K., Patindol, S, Ringhald, B (2021). the Global Search for Sustainable Schools Programme: Synthesis.' IGES. and One Planet; Japan.

3. Bianchi, G., Pisiotis, U. and Cabrera Giraldez, M., GreenComp The European sustainability competence framework, Punie, Y. and Bacigalupo, M. editor(s) (2022) EUR 30955 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-46485-3, doi:10.2760/13286, JRC128040.

4. Bieler, A., Haluza-Delay, R., Dale, A., & McKenzie, M. (2018). A national overview of climate change education policy: Policy coherence between subnational climate and education policies in Canada (K–12). *Journal of Education for Sustainable Development*, 11(2), 63–85. DOI: https://doi.org/10.1177/0973408218754625 (accessed 3.1.22).

5. Breiting S., Mayer M. (2015). Quality Criteria for ESD Schools: Engaging Whole Schools in Education for Sustainable Development. In: Jucker R., Mathar R. (eds) Schooling for Sustainable Development in Europe. Schooling for Sustainable Development, vol 6. Springer, Cham . DOI: https://doi.org/10.1007/978-3-319-09549-3_3.

6. Buckley, C and Creech. H. (2014). Shaping the future we want: UN Decade of Education for Sustainable Development (2005-2014); final report Paris: UNESCO ED.2014/WS/29 20.

7. Department for Education (2021). *Sustainability & Climate Change: A draft strategy for the education & children's services systems* London: HMG https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1031454/SCC_DRAFT_Strategy.pdf (accessed 3.1.22).

8. European Commission (n.d.). *European Education Area: Quality Education and Training for All*. Available at: https://education.ec.europa.eu/focus-topics/green (accessed 24.12.21).

9. European Commission (2019). *Biodiversity Strategy 2030.* Available at: https://ec.europa.eu/environment/strategy/biodiversity-strategy-2030_en (accessed 21.12.21).

10. European Commission (2019). *The Green Deal: Striving to be the first Climate Neutral Continent* https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en (accessed 12.12.21).

11. European Commission (2019). 'A Council Recommendation on Education for Environmental Sustainability Education: A proposal by the Commission' Available at: https://op.europa.eu/en/publication-detail/-/publication/e4dc0318-9c2c-11eb-b85c-01aa75ed71a1/language-en (accessed 12.01.21).

12. European Commission (2022). *Commission Staff Working Document Accompanying the document Proposal for a Council Recommendation on learning for environmental sustainability.* Brussels: EC. https://education.ec.europa.eu/document/commission-staff-working-document-accompanying-the-document-proposal-for-a-council-recommendation-on-learning-for-environmental-sustainability

13. *European Forum on Science and Education for Sustainability German Presidency of the EC. From Ambition to Action: Together for an Innovative Sustainable Europe https://www.youtube.com/watch?v=I2LGMvPQJiM* (accessed 2.1.22).

14. Ferreira, J, Ryan, L and Tilbury, D. (2006). *Whole School Approaches to Sustainability: A review of models for professional development in pre-service teacher education*. Sydney: ARIES Australian Government https://www.researchgate.net/publication/29462162_Whole_School_Approaches_to_Sustainability_A_review_of_models_for_professional_development_in_pre-service_teacher_education (accessed 26.12.21).

15. Fullan, M and Scot, G. (2010). Turnaround leadership for higher education Higher Education 59(6):801-803 DOI: 10.1007/s10734-009-9272-3

16. Garcia, R., Junyent, M. and Fonolleda, M (2017) Competencis Professionales en Educacion para la Sostenibilidad Desde la Complejidad. Enseñanza de las Ciencias Revista de investigación y experiencias didácticas Núm. extra:4873- https://www.researchgate.net/publication/319665897_COMPETENCIAS_PROFESIONALES_EN_EDUCACION_PARA_LA_SOSTENIBILIDAD_DESDE_LA_COMPLEJIDAD (accessed 2.1.22).

17. González-Gaudiano, E., & Meira-Cartea, P. (2010). Climate change education and communication: A critical perspective on obstacles and resistances. In F. Kagawa & D. Selby (Eds.), *Education and climate change: Living and learning in interesting times* (pp. 13–34). London: Routledge.

18. Government Office for London (2008). *Towards Whole School Sustainability: A View from London Schools,* London: Government Office for London.

19. Hargis, K. , McKenzie,M., LeVert-Chiasson, I. (2021). C*urriculum and Learning for Climate Action. Toward an SDG 4.7 Roadmap for Systems Change* | Koninklijke Brill. https://findanexpert.unimelb.edu.au/scholarlywork/1608152-curriculum-and-learning-for-climate-action (accessed 2.1.22).

20. Hargreaves, L. (2008). 'The whole-school approach to education for sustainable development: From pilot projects to systemic change', Policy and Practice: A Development Education Review, Vol. 6, Spring, pp. 69-74.

21. Henderson K, and Tilbury D (2004). *Whole-School Approaches to Sustainability: An International Review of Sustainable School Programs.* Report Prepared by the Australian Research Institute in Education for Sustainability (ARIES) for The Department of the Environment and Heritage, Australian Government ARIES: Canberra https://aries.mq.edu.au/projects/whole_school/files/international_review.pdf (accessed 26.12.21).

22.   Hicks, D.   (2012). Sustainable Schools, Sustainable Futures: *A resource for WWF-UK*   WWF-UK: Godalming World Wide Fund for Nature UK https://www.researchgate.net/publication/285228224_Sustainable_Schools_Sustainable_Futures (accessed 2.1.22).

23.   Hicks, D. (2010). The Long Transition: Education for optimism and hope in troubled times January 2010 Conference: 3rd Annual Conference of the UK Teacher Education Network for Education for Sustainable Development and Global Citizenship. https://www.researchgate.net/publication/285232652_The_Long_Transition_Education_for_optimism_and_hope_in_troubled_times accessed 2.1.22).

24.   Hicks, D. (2021). The future only arrives when things look dangerous: Reflections on futures education in the UK Futures 44(1):4–13. DOI: 10.1016/j.futures.2011.08.002.   Also   available   at: https://www.researchgate.net/publication/256712797_The_future_only_arrives_when_things_look_dangerous_Reflections_on_futures_education_in_the_UK. (accessed 2.1.22).

25.   Jensen, V., Benavot, A. and Mckenzie, M. (2021). *Learn for Our Planet: A global review of how environmental issues are integrated in education*. Paris: UNESCO.

26.   Jickling,   B.   (2010).   Why   I   Don't   Want   My   Children   to   Be   Educated   for   Sustainable   Development The Journal of Environmental Education Volume 23, 1992 - Issue 4, Pages 5-8 .

27.   Mathar R (2013). The concept of the Whole School Approach – a platform for school development with focus on sustainable development .

28.   Mogren A, and Gericke N (2019). School Leaders' Experiences of Implementing Education for Sustainable Development—Anchoring the Transformative Perspective. Sustainability 11(12): 3343. DOI: https://doi.org/10.3390/su11123343 .

29.   Mogren A, Gericke N, Scherp H-A (2018). *Whole School Approaches to Education for Sustainable Development: a model that links to school* improvement. Environ. Educ. Res. 25(4): 508– 531. DOI: https://doi.org/10.1080/13504622.2018.1455074 .

30.   OECD (2022). Learning. Compass 2030: Concept Note - In Brief   https://www.oecd.org/education/2030-project/teaching-and-learning/learning/learning-compass-2030/OECD_Learning_Compass_2030_concept_note.pdf (accessed 2.1.22).

31.   Reiner, M. A (2013). *whole school approach to sustainable development: Elements of education for sustainable development and students' competencies for sustainable development*. In Schooling for Sustainable Development in Europe; Jucker, R., Reiner, M., Eds.; Springer International Publishing: Cham, Switzerland; Heidelberg, Germany; New York, NY, USA; Dordrech.

32.   Ryan, A & Tilbury, D (2013). 'Uncharted waters: voyages for Education for Sustainable Development in the higher education curriculum' Curriculum Journal Volume 24, Issue 2. DOI: https://doi.org/10.1080/09585176.2013.779287.

33.   Scott, G (2003). Learning Principals: leadership capabilities in school Sydney: UTS and NSW Department of Education and Training. https://www.academia.edu/2296673/Learning_principals.

34.   Scott, G., Coates, H., & Anderson, M. (2008). Learning leaders in times of change: Academic Leadership Capabilities for Australian Higher Education. https://research.acer.edu.au/higher_education/3 .

35.   Symons, G. (2008). *Practice, Barriers and Enablers in ESD and EE: A Review of the Research*, Preston Montford, Shrewsbury: SEED.

36.   Tilbury D, Wortman D (2005). *Whole school approaches to sustainability*. Geographical Education 18: 22–30.

37.   Tilbury, D (2011). 'Education for Sustainable Development: An Expert Review of Processes and Learning' Paris: UNESCO. Available in Spanish, French and English.ED-2010/WS/46   Paris:UNESCO. https://www.researchgate.net/publication/255963640_Tilbury_D_2011_'Education_for_Sustainable_Development_An_Expert_Review_of_Processes_and_Learning'_Paris_UNESCO_Available_in_Spanish_French_and_EnglishED-2010WS46 (accessed 26.12.21).

38.   Tilbury, D. (1995). Environmental Education for Sustainability: Defining the New Focus of Environmental Education in the 1990s. Environmental Education Research, 1, 195-212. DOI: http://dx.doi.org/10.1080/1350462950010206.

39.   Tilbury, D. (2016). *Student Engagement and Leadership in Higher Education for Sustainability*. In Barth M, Michelsen G, Rieckmann M, Thomas I (Eds.) Routledge Handbook of Higher Education for Sustainable Development, pp. 241-260. Routledge: London and New York.

40.   Tilbury, D. (2020). Education and Learning for a Sustainable Europe. From Ambition to Action: Together for an Innovative Sustainable Europe *European Forum on Science and Education for Sustainability German Presidency of the EC.* https://www.youtube.com/watch?v=I2LGMvPQJiM (accessed 2.1.22).

41.   Tilbury, D., Coleman, V. and Garlick, D. (2005). 'A National Review of Environmental Education and its Contribution to Sustainability in Australia: School Education'. Canberra: Australian Government Department of the Environment and Heritage and Australian Research Institute in Education for Sustainability. Vol 2 ISBN: 1 86408 993 8*.

42.   Tilbury. D. and Wortman D. (2004). Engaging People in Sustainability Geneva: IUCN   https://portals.iucn.org/library/efiles/documents/2004-055.pdf (accessed 2.1.22).

43.   UNECE Steering Committee on ESD (2012). *Learning for the Future: Competences in Education for Sustainable Development   Geneva; UNECE* https://unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf (accessed 26.12.21).

44.   UNECE Steering Committee on ESD (2021). Pre-final draft concept note for the post-2021 implementation framework: Strategic Document on ESD for the UNECE Region2021-2030 Geneva: UNECE.

45.   UNESCO (2012). Education for sustainable development: Sourcebook. Education for Sustainable Development in Action. Learning & Training Tools, Paris 07 SP, France UNESCO.

46.   UNESCO (2014). *UNESCO Roadmap for Implementing the Global Action Programme on Education for Sustainable Development*, Paris 07 SP, France..

47. UNESCO (2017). *Implementing the Whole-School Approach under the Global Action Programme on Education for Sustainable Development. Information Note for National Coordinators of UNESCO′s Associated Schools Project Network* (23.03.2017), Paris 07 SP, France.

48. UNESCO (2019). '*Education for Sustainable Development: Towards achieving the SDGs' ESD for 2030* Paris; UNESCO https://en.unesco.org/news/esd-2030-whats-next-education-sustainable-development (accessed 26.12.21).

49. UNESCO (2020). *Education for Sustainable Development. A roadmap*, UNESCO: Paris, France .

50. UNESCO (2021). *Berlin Declaration on Education for Sustainable Development*, Berlin. https://en.unesco.org/sites/default/files/esdfor2030-berlin-declaration-en.pdf (accessed 26.12.21).

51. UNESCO ASPNET (2019). Associated Schools 4 Climate https://www.youtube.com/watch?v=RkoXX4m9wR8 (accessed 2.1.22).

52. UNESCO German Commission (2021). UNESCO Associated Schools: A Whole School Approach https://www.youtube.com/watch?v=xE1kJPAC40M (accessed 2.1.22).

53. UNESCO, Canadian Commission (2020). *Teachers' toolkit: UNESCO Schools Network in Canada*. CCUNESCO.

54. UNESCO. (2016). *Getting climate-ready: A guide for schools on climate action*. Paris. https://unesdoc.unesco.org/ark:/48223/pf0000246740 (accessed 3.1.22).

55. Vare, Paul (2018). *A rounder sense of purpose: developing and assessing competences for educators of sustainable development.* Form@re, 18 (2). pp. 164-173. doi:10.13128/formare-23712.

56. Wals, A. (2021). 'Regenerative Education as a Driver of Socio-Ecological Sustainability; A Whole-person; Whole-school and Whole-Community perspective' Keynote, European Education Summit: The next decade of the European Education. https://education.ec.europa.eu/event/fourth-european-education-summit-the-next-decade-of-european-education (accessed 26.12.21).

57. Winter, J., and Cotton, D. (2012). Making the hidden curriculum visible: sustainability literacy in higher education Environmental Education Research2012 / 12 Vol. 18; Issue. 6 .

58. WWF (2011). Pathways to education for sustainable development. A practical tool for planning a whole school approach, United Kingdom.

59. WWF-UK (2010). Learning for Sustainability in Schools: effective pedagogy. A report by WWF-UK based on research by Dr Chris Gayford: WWF UK, Godalming. Pp68. http://assets.wwf.org.uk/downloads/wwf_pedagogy_report_final__no_back_tint__web.pdf (accessed 2.1.22).

[1] Including civil society, teacher unions, industry groups.

[2] *EC Council recommendation on learning for environmental sustainability* (2022)

[3] EC *The Green Deal (2019)*

[4] *EC Biodiversity Strategy for 2030 (2019)*

[5] EC *Communication on the European Education Area*

[6] EC *Council Recommendation on learning for environmental sustainability* (2022)

[7] *EC Staff Working Document Accompanying the document Proposal for a Council Recommendation on learning for environmental sustainability (2022)*. This research by DG Education, Youth, Sport and Culture as part of the preparation of the Council Recommendation combines three main inputs: i) recent consultation with policy makers from EU Member States and partner countries, NGOs, teachers, students, youth representatives and other stakeholders and ii) a public consultation which requested written input (1369 replies and 94 position papers received); and iii) a strong research base, including three dedicated studies

[8] *EC Staff Working Document Accompanying the document Proposal for a Council Recommendation on learning for environmental sustainability (2022)*

[9] UNESCO *Education for Sustainable Development: Towards achieving the SDGs: ESD 2030* (2019); UNESCO ESD 2030 toolbox https://en.unesco.org/themes/education-sustainable-development/toolbox; ESD 2030 RoadMap https://unesdoc.unesco.org/ark:/48223/pf0000374802.locale=en

[10] UNESCO *Berlin Declaration on Education for Sustainable Development* (2021)

[11] UNECE *ESD Strategy: Concept Note* (2021)

[12] Tilbury et al (2005) *National Review of Environmental Education and its Contribution to Sustainability in Australia: School Education'*

[13] See for example: Hargis et al. (2021) and,SEED (2016). For more information: https://se-ed.co.uk/whole-schoolinstitution-approaches-education-sustainable-development-esd-backgrounder/l where the two concepts are used interchangeably.

[14] Buckler and Creech 2014, p. 30

[15] Henderson and Tilbury (2004); Hargreaves (2008).

[16] Wals (2021) *Regenerative Education as a Driver of Socio-Ecological Sustainability; A Whole-person; Whole-school and Whole-Community perspective (2021)*; Tilbury and Wortman *Whole School Approaches to Sustainability* (2005). Buckley and Creech (2014) *Shaping the future we want: UN Decade of Education for Sustainable Development (2005-2014); final report.*

[17] Government Office for London (2008); Tilbury (2020)

[18] *EC Staff Working Document Accompanying the document Proposal for a Council Recommendation on learning for environmental sustainability (2022)*.

[19] Appleby et al (2021); Tilbury (2011); Wals (2021)

[20] Winter and Cotton (2012), p. 785

[21] Buckley and Creech (2014)

[22] Wals (2021); Tilbury (2021)

[23] ET2020 Working Group on Schools (2015) A whole school approach to inclusion: the role of teachers and school leaders. Results from the work of the ET2020 Working Group on Schools (2014/15); ET2020 Working Group on Schools (2018) Teachers and school leaders in schools as learning organisations Guiding principles for policy development in school education Produced by the ET 2020 Working Groups

[24] Image credit: Westside Secondary School, Gibraltar. Recreation of image which appears at the entrance to the school. Tilbury (2019).

[25] Tilbury(2021). Recreation.

[26] Henderson and Tilbury (2004) mapped the roots of a whole school approach to sustainability back to early 1990s

[27] Examples include: Appleby et al (2021); Hargis et al (2021); Henderson and Tilbury (2004); Ferriera et al (2006); Mogren et al (2018)

[28] Henderson and Tilbury (2004)

[29] Mogren et al (2018); Appleby et al (2021)

[30] Hicks (2010)

[31] Hicks (2010) ; Hicks (2012); Hicks (2021)

[32] Tilbury (2021)

[33] OFSTED (2009)

[34] EC DG Education (2022)

[34] UNESCO (2019)

[35] Garcia et al (2017) ; Bianchi et al (2022)

[36] Garcia et al (2017); Vare (2021)

[37] OECD (2022) Learning Compass 2030

[38] Tilbury (1995)

[39] WWF (2010); Tilbury et al 2005; WWF (2010)

[40] Hargis et al (2021)

[41] Hargis et al (2021); Wals (2021); Tilbury (1993)

[42] González-Gaudiano & Meira-Cartea (2010); Tilbury (2011); Hargis et al (2021)

[43] Symons, G (2008); Mogren and Gericke (2019)

[44] Appleby et al (2021)

[45] Hicks (2016)

[46] WWF (2010)

[47] WWF (2010)

[48] EC DG Education (2022)

[49] Ferriera et al (2006). a study commissioned by the Australian Government on the adoption of whole school approaches to sustainability in initial teacher education

[50] *EC Staff Working Document Accompanying the document Proposal for a Council Recommendation on learning for environmental sustainability (2022)*.

[51] Ferriera et al (2006)

[52] UNECE (2005); Garcia et al (2017); Vare (2018)

[53] *EC Staff Working Document Accompanying the document Proposal for a Council Recommendation on learning for environmental sustainability (2022)*.

[54] *European Forum on Science and Education for Sustainability German Presidency of the EC (2019)*

[55] DfE (UK) Climate Change and Sustainability Strategy (2021)

[56] Ryan and Tilbury (2013)

[57] *EC Staff Working Document Accompanying the document Proposal for a Council Recommendation on learning for environmental sustainability (2022)*.

[58] *EC Staff Working Document Accompanying the document Proposal for a Council Recommendation on learning for environmental sustainability (2022)*.

[59] 'DuurzaamDoor' is an initiative of the Dutch government, e.g. the Ministry of Agriculture, Nature and Food Quality and is executed by the Netherlands Enterprise Agency

[60] UNESCO (2020). Available at: https://unesdoc.unesco.org/ark:/48223/pf0000374802.locale=en

[61] UNESCO ASPnet (2019)

[62] UNESCO German Commission (2021)

[63] Hargis et al (2021)

[64] Bieler et al (2018)

[65] DfE (UK) Climate Change and Sustainability Strategy (2021)

[66] However, in digital education ther EC has a whole school framework that can been used to develop self-assessment tools for schools https://ec.europa.eu/jrc/en/digcomporg

[67] Mathar (2013); Reiner (2015); Appleby et al (2021)

[68] Government office for London (2008); Tilbury (2016)

[69] Tilbury and Wortman (2005); Tilbury (2011)

[70] Hicks (2012);(2010); (2012); (2021)

[71] Jickling (1992)

[72] Tilbury (2020); Hargris el al (2021)

[73] EC DG Education (2022.) Commission Staff Working Document accompanying the Council recommendation on EES.

[74] Mogren et al (2018)

[75] Breiting et al (2015); Mogren et al (2018)

[76] Mogren et al (2018)

[77] Scott (2003); Fullen and Scot (2010); Scott et al (2018)

[78] Mogren et al (2008)

[79] *Global Search for Sustainable Schools Awards*. Available at: https://www.oneplanetnetwork.org/knowledge-centre/projects/global-search-sustainable-schools-0; *Eco-schools. Available at:* https://www.ecoschools.global/; *Green Schools International. Available at:* https://www.greenschool.org/ Envioschools https://enviroschools.org.nz/; *EU Schools Go Green. Available at:* https://schoolsgogreen.eu/

[80] *EC Staff Working Document Accompanying the document Proposal for a Council Recommendation on learning for environmental sustainability (2022)*.

[81] *Global Search for Sustainable Schools Awards*. Available at: https://www.oneplanetnetwork.org/knowledge-centre/projects/global-search-sustainable-schools-0

[82] Source: https://enviroschools.org.nz/creating-change/stories/te-ruma-rata-and-te-ruma-pohutukawa-kaitiaki-of-birds-and-habitats-at-fairhall-school/

[83] Henderson and Tilbury (2016)

[84] Source: https://www.futuregenerations.gi/news/sustainable-schools-10

[85] Henderson and Tilbury (2006)