School Leadership, Education for Sustainable Development (ESD), and the Impact of the COVID-19 Pandemic: Perspectives of Principals in China, Germany, and the USA

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Abstract: We live in times of multiple crises. Climate change, degradation of soils, loss of biodiversity, COVID-19, and the war in Ukraine, to name but a few. School leaders are challenged in many ways to tackle the consequences of these crises, to prepare students for a future that will foreseeably be full of crises too, and to just do their “normal” daily work: to make sure that the school is running successfully in order to help students learn how to read, write, calculate, etc. Education for sustainable development (ESD) is a concept that aims at empowering learners with the knowledge, skills, values, and attitudes to address the interconnected global challenges we are facing. This article reports on a study that seeks to investigate what principals in Germany, China, and the United States do to integrate sustainability and ESD in their schools. It specifically addresses the issue of COVID-19 and its impact on the establishment of ESD.

Keywords: education for sustainable development (ESD); school leadership; principals; COVID-19; whole school approach

1. Introduction: School Leadership in Times of Multiple Crises

Scientists have long since warned that we are overusing natural resources and living above the limits of planet earth (“Planetary Boundaries”) [1]. Currently, climate change is most prominently discussed, but other developments, such as loss of biodiversity, are no less important and dangerous [2]. Early in 2020, a new virus began to spread worldwide and caused an unprecedented pandemic with manyfold consequences in societies. In 2022, on top of this, new crises developed: the illegal war of aggression against Ukraine provoked migration within and out of Ukraine, resulting in a hunger crisis in the global south, a gas and energy crisis in Europe, and severe damage to international cooperation.

These crises are interdependent and mutually reinforcing. Climate change, for example, destroys fertile soils and the livelihood of people in many countries [3] and thus leads to hunger. In 2021, as a consequence of the COVID-19 pandemic, the global number of people suffering from hunger rose to as many as 828 million, an increase of approximately 46 million since 2020 and 150 million since the outbreak of the COVID-19 pandemic [4]. In 2022, the war in Ukraine further exacerbated the global hunger crisis. Schools are affected by the abovementioned crises in many ways. To prevent the spread of the SARS-CoV-2 virus, since March 2020, schools for more than 168 million children globally have been closed for almost a full year. On average, schools have been closed for 95 instruction days [5]. More than 24 million learners, from pre-primary to university levels, are at risk of not returning to school [6]. In Germany, as of August 2022, more than 150,000 children of Ukrainian refugees are attending classes in schools [7] and need the attention of the school community to be successfully integrated.
School leadership in these times is challenging [8]. During the pandemic, principals had to take extraordinary measures to deal with the health and safety threats caused by the virus; they had to learn new technologies and provide support to teachers in the use of these technologies. School leaders are called upon to respond to emergencies but have not been prepared to manage such crises [9]. However, schools not only have to manage these multiple crises, they need to prepare children for a future that is yet unknown but will predictably be affected by more crises as a consequence of the abovementioned ecological developments and their social effects.

Education for sustainable development (ESD) aims at preparing children for this future. However, how do principals meet the challenge of handling multiple crises that require immediate actions on a day-to-day basis on the one hand and promoting long-term projects such as the implementation of ESD on the other hand—the latter being a responsibility that is not as pressing, but is no less important?

2. Goal of the Study

Against this background, our study seeks to explore how principals in China, Germany, and the U.S.A. deal with the implementation of ESD in their schools. Considering the above-described situation of “leadership in crisis”, we are specifically addressing the issue of COVID-19 and its impact on the establishment of ESD.

3. State of Research

3.1. Sustainable Development (SD) and Education for Sustainable Development (ESD)

During the last three decades, sustainable development (SD) has become a guiding societal value. Since 1992 and the Earth Summit in Rio de Janeiro, it has been the official goal of the majority of nations worldwide. In 2015, the United Nations adopted Agenda 2030, “a plan of action for people, planet and prosperity [. . . ] to shift the world onto a sustainable and resilient path” [10]. An important part of Agenda 2030 is the 17 sustainable development goals [11], SDGs, which address the most urgent problems of humanity and the planet, such as poverty, hunger, climate change, loss of biodiversity, etc. From the beginning, the agenda and the 17 SDGs have been criticized as being inconsistent and difficult to qualify, implement, and monitor [12]. Yet, Agenda 2030 is the one sustainability effort that is supported worldwide by many states, companies, NGOs, and educational institutions. Unfortunately, the abovementioned latest developments, the COVID-19 pandemic, and the war in Ukraine are menacing to jeopardize Agenda 2030 and SDGs, as revealed by the latest report on the progress of SDGs [13].

“Quality Education” is goal number 4 of the 17 sustainable development goals, but it is also connected to all other goals. Climate change, hunger, injustice, or diseases cannot be cured by education, but for sure, they cannot be cured without education. ESD is one of the subgoals of goal 4. The goals are described as follows: “By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development” (“Sustainable Development Goal 4 (SDG 4),” accessed on 15 July 2022). Various UN programs have addressed ESD and aim to push its implementation forward [14–17].

Despite the many efforts of the UN, the current status of ESD, from a world perspective, is still very diverse. There are countries with far-developed ESD activities; others are just beginning. However, within countries, one can also find a huge variety of statuses. Often, there are some schools that are well on the way and others that are far behind. Additionally, most often, singular activities are prevailing, and ESD is not yet structurally anchored within schools.
3.2. Sustainable Development (SD) and Education for Sustainable Development (ESD)

Having focused on earlier programs mainly on teaching and learning, in its latest programs, UNESCO also aims to implement changes at the institutional level. One of the five priority fields in “ESD for 2030” is “Transforming learning and training environments”: “To encourage learners to become change agents who have the knowledge, means, willingness and courage to take transformative action for sustainable development, learning institutions need, themselves, to be transformed. The entire learning institution needs to be aligned with sustainable development principles, so that learning content and its pedagogies are reinforced by the way facilities are managed and how decisions are made within the institution. This Whole Institution Approach to ESD calls for learning environments where learners learn what they live and live what they learn” [17] (p. 28).

In this context, UNESCO now expressively addresses the “Leaders of learning institutions, including school principals, presidents and rectors of universities and colleges, heads of TVET centres and of staff training centres in private companies” as main actors. “Leadership for ESD” has rarely been the focus of empirical research. Although school effectiveness research has shown that principals have a decisive influence on the quality and the performance of a school [18] and that leadership is the second most important factor related to students’ learning outcomes [19], there is only a small number of studies that have investigated the role of principals in ESD [20].

Several studies point out the important role of the principal in establishing and promoting ESD in Schools [21,22]. Principals must create a shared vision related to ESD within their schools and organize a participative process, emphasize ESD in daily life, support teachers in the application of ESD, and facilitate students’ engagement [23].

Principals appear to be primarily motivated by a personal interest in SD and ESD and in matters that affect the future of their communities [24]. Their motivation may additionally be enhanced by the support they receive from other principals and leadership teams [25]. To create a sustainable school, the principal’s care for and commitment to SD and ESD plays an important role in implementing ESD [26,27]. Principals need several competencies, for example, sufficient knowledge of ESD [28] and an interdisciplinary frame and understanding of ESD [29]. To successfully organize a complex change process, they need strategic and systematic thinking, communication skills, and the ability to address the various stakeholders involved [30].

In many schools, ESD is a matter of projects by individual teachers and limited by a lack of cooperation [28]. It is often uncoordinated, restricted to special occasions, and not an essential component of the school program [29]. However, especially in recent studies, the importance of a holistic concept is highlighted. Following the whole school approach—sometimes also referred to as the whole institution or whole system approach—ESD must be anchored in structures and processes [31]. Therefore, a participative process of school development must be organized that includes the whole staff and other stakeholders of the school [23].

Some studies identified measures that principals take to establish ESD, such as the development and distribution of a shared vision for ESD, the development of a school program that includes ESD, the appointment of a coordinator for ESD, the institution of committees to tackle ESD matters in the school or extra hours for teachers to implement ESD [23,32,33]. ESD is a collegial effort and requires teamwork [24], as well as corresponding leadership approaches such as distribution of responsibility [25,31], shared leadership [31], and responsible leadership [23].

In one study, several principals pointed out that self-management is required to maintain one’s resources [30]. “Introducing ESD in schools is not a sprint, it’s marathon”, as the authors summarize. To lead their schools and staff, principals must first be able to lead themselves. This includes the principal’s self-awareness and personal beliefs, time management, work–life balance, and personal development.

Principals involved in the studies named several barriers that hinder the process of implementing ESD in schools, e.g., lack of time to appreciate the complexities of ESD [29,34],
shortage of funds [34], or limited examples of good practice regarding leadership for SD and ESD [29]. They also complained about the limited support of ESD by the government and the absence of holistic, systematic, and long-term government policy [34,35].

3.3. ESD in China, Germany, and the USA—A Short Overview

There are many differences between China, Germany, and the USA in general, between their respective school systems, and between the status of ESD within the countries [30]. Due to restrictions of place, we can only provide a short overview referring to ESD.

Germany has a long history of environmental education and adopted the concept of ESD early [36,37]. The ESD decade helped to develop structures for ESD and inspired numerous ESD projects [38]. Answering the global action program for ESD (GAP), the German Government adopted the National Action Plan for ESD [39], which led to many activities. ESD and the outcomes of the National Plan are monitored [40,41]. One large-scale study showed that the implementation of ESD has an impact on behavior [42]. One goal of the National Plan was to integrate ESD into many formal documents, e.g., the statewide curricula. This effort succeeded in many cases, but there are big differences between the 16 states [43]. Despite this, ESD is not yet structurally anchored within schools [42].

School leadership and organizational development for ESD were long not within the focus of educational policies and practice in Germany. This changed after the GAP when the whole institution approach became a prominent guideline for ESD [44]. Additionally, the “development, testing, consolidation and dissemination of qualification concepts for leaders” is now a goal within the German Federal Government’s National Action Plan on ESD [39] (p. 43). Regarding research on leadership for ESD, only a few studies explored the field [23,33].

In the United States, several high-level initiatives sought to foster the development of ESD. Responding to the ESD decade, programs were created to raise awareness for ESD and to expand ESD in schools. The GAP accelerated progress towards ESD, but despite many activities, ESD is only just starting to develop in the United States. Monitoring ESD activities on a national and state level is sporadic. Little is known about the role of principals in ESD.

Most ESD research that has focused on teaching and learning has alluded to the importance of the school leader. Indeed, the results of school effectiveness research allow the conclusion that school principals can exert significant influence in this area. Nevertheless, the role and contributions of school leaders in the implementation of sustainability and ESD in schools have rarely been the subject of empirical studies [22,45,46].

In China, the environmental crisis led to more and more environmental policies, starting in the 21st century. ESD is considered an essential area in the new Chinese educational reform. The country answered to the UN decade and the following programs by developing structures and with teaching and learning projects. Environmental issues are integrated into official documents. ESD is still focused on environmental issues and not yet on sustainability in a comprehensive way. The role of school leadership for ESD is not yet the focus.

In mainland China, one notable experience was the large-scale national environmental education (EE) project conducted by three organizations [47]: governmental agencies (The Ministry of Education, PRC), an international non-profit organization (the World Wildlife Fund of China), and an international corporation body (British Petroleum, [short for BP]). The project was planned to be carried out in three phases over a 10-year period, from 1997 to 2007, which aimed to disseminate ESD within the Chinese education system. To hit this target, many approaches have been determined, such as designing a school-based curriculum (including primary and middle school), developing green school projects, promoting ESD in the community, and addressing research on ESD in higher educational institutions [48].
Regulations of Beijing in 2020 also emphasized that the knowledge of garbage classification in all schools should reach 100%. Chaoyang District of Beijing proposed a “1 + 6 0 + N” strategy to promote the regulations [49], where 1 refers to garbage classification action, 60 refers to the current national experimental schools of Education for Sustainable Development in Chaoyang District, the successful/model schools designated by the China National Working Committee for UNESCO on ESD, and N refers to all schools, preschools, primary school, junior high schools, senior high schools, and vocational schools. The 60 model schools play a leading role in garbage classification and then share their experiences with all schools in the district.

Under the guidance of the China National Working Committee for UNESCO and the pressures from the rapid growth of Shenzhen, a charitable organization, the Hong Kong Education for Sustainable Development Association (HKESD), was established in 2003. Six middle schools and one primary school were assigned as the ESD schools in the Hong Kong ESD project [50]. Through the quality evaluation of these schools in five aspects, school management, teaching and learning, moral education activities, school campus environment, and student all-roundedness [51], the authors suggested that student learning and innovation and teacher development need to be further improved in ESD experimental schools. The report highlights that schools should encourage principals’ and teachers’ professional development in ESD and facilitate students to engage in sustainable development-related courses or programs [52].

Taiwan also generated a series of strategies to promote sustainable development. The Environmental Basic Law was granted in 2002 [53]. Putting the policy into practice, the Environmental Protection Administration (EPA) and the Ministry of Education (MOE) in Taiwan have been trying to promote environmental education (EE), which has been incorporated into the school curriculum [53]. For recent years, more than 10 EE centers have been established in Taiwan, according to the variety of geographical locations and resources. Each center is composed of university scholars who focus on environmental education, teachers from primary and middle schools, which aim to make contributions to ESD in Taiwan, and five working contents are summarized [53], (a) developing learning materials and curriculum for students of all levels, (b) organizing conference related ESD, (c) holding teacher’s workshops for ESD, (d) developing the Taiwan Greenschool Partnership Project, and (e) conducting the Taiwan Sustainable Campus Program. Such environmental education actions keep pace with the sustainable development policy framework and could help increase students’ attitudes toward environmental protection actions and skills [54,55].

3.4. The Impact of COVID-19 on ESD

In general, the pandemic had a heavy impact on schools and has caused severe damage worldwide [56]. Schools moved to teaching online or in blended learning scenarios, but many struggled with information and communication technology (ICT) infrastructure and the lack of ICT skills of teachers [57]. Exams had to be cancelled or postponed, and schools had to reevaluate how to monitor student progress and success [58]. The pandemic caused an acceleration of education inequality, especially in countries/communities where inequality was already high and access to online learning was limited [59,60]. Some indicators point to a decline in school performance [61]. The full impact of the pandemic will presumable only be seen within the coming years.

All of this also affected ESD, but in addition, there were some specific effects of the pandemic on ESD. Due to a lack of face-to-face contact activities, typical experiential ESD activities, projects such as eco days, and eco-clubs were not possible and had to be cancelled [62]. The development of sustainability competencies via online teaching is difficult. ESD requires problem or inquiry-based pedagogies. Many schools did not have any experience using such pedagogies via digital platforms. Many teachers were focused on handling other issues and lost their focus on ESD [58].
However, the pandemic seems to have had some positive effects, too. Some teachers moved from a lecturing approach to a more interactive, participatory approach to teaching and changed their role to a “facilitator” rather than “deliverer of content” [63–65]. Additionally, the use of outdoor learning spaces was encouraged. Since outdoor activities were possible, some teachers used “green” learning environments such as school gardens and woods [58]. Another study identified that sustainability enhanced pre-service teachers’ SD (students’ sustainability consciousness) in online educational settings [66].

4. Theoretical Background

This study refers to the whole school approach as a general background for ESD. In line with the general goal of transforming learning and training environments, this approach aims to not just teach sustainability but to integrate sustainability principles into daily practice, managing physical facilities more sustainably, and change the ethos and governance structure of the whole institution [15,44,67]. The physical place, including the building, the surrounding environment, and the resources that flow through the school, provide opportunities for education as well as a visible representation of the school’s values [68]. The approach also moves often neglected aspects, such as finances, material cycles and resource management, structural design, and equipment, into the focus [69]. The holistic transformation of a school into a learning and teaching environment that supports sustainability requires a comprehensive school development process that requires individuals across the school, school staff, faculty, students, parents, principals, and external partners to work together [23,68].

A second model we are referring to is the three-way model of school development (Figure 1) by Hans-Günter Rolff [70–72]. According to this model, school development involves three components: instructional development, human resource development, and organizational development. The application of the model requires thinking in systemic relationships. This means that all three components of school development must be considered. It is up to the school in which of the three areas they start, but in the end, “every path of school development necessarily leads to the other two” [72] (p. 19, translated by the authors). In other words, as Rolff puts it, “no lesson development without organizational development and human resource development, no organizational development without HR development, no HR development without organizational development and lesson development” [72] (p. 21, translated by the authors). These three fields of school development are interconnected and mutually dependent. To succeed in a process of school development, school management must address all three of them.

Very much in accordance with the whole school approach, the model puts all activities of school development in the context of the schools’ environment. It underscores the importance of addressing and including the various external stakeholders of the school.

Against the background of these two approaches with their holistic view of school development, the study seeks to investigate how principals in China, Germany, and the USA act to implement ESD in their schools and how they handle the consequences of the pandemic in this regard.
5. Methods

5.1. Participants

Ten German principals from schools in the state of Baden-Württemberg, six US principals from schools in the state of North Carolina, and thirty-two principals from schools in the province of Guangdong, China, participated in this study. Due to the pandemic and the resulting turbulences at schools, finding school leaders willing to participate proved difficult. Therefore, we used convenience sampling and addressed principals we had access to; study participants also recommended other colleagues. Various non-specialist school types, elementary schools, middle schools, and high schools, were represented in the group. Based on the German sample, the interviews from the USA and China were compared (Figure 2).

Figure 1. Three-way model of school development, Rolff, 2016, p. 20, translated by the authors.
5.2. Procedures

Since this field of research is relatively new and still less developed, the study is based on a descriptive–explorative approach (Figure 2). Semi-structured expert interviews [73] with principals of various non-specialist school types were conducted in Germany, the USA, and China.

The five interview questions were:
1. In your school, do you have ESD activities/programs/curricula? If so, please describe them in detail.
2. In your school, what role does human resource management play in implementing ESD activities/programs/curricula?
3. In your school, what role does organizational development play in implementing ESD activities/programs/curricula?
4. From your perspective, what competencies must principals have in order to create/sustain ESD in their schools?
5. In what ways has the COVID-19 pandemic impacted ESD activities/programs/curricula in your school?

Figure 2. Qualitative design (qualitative-explorative approach).

For the purpose of uniformity in the collection of data and analysis, the German interview guide was translated and retranslated in both countries (the USA and China). Because of the semi-structured interview guide, the questions allowed open-ended responses and were flexible enough to handle the complexity of the issue. For example, the interviewer was able to collect new information on unexpected dimensions of the topics by spontaneously phrasing new or more suitable or additional questions.

In each country, the interviews were conducted by the same researcher. The interviews were audiotaped and transcribed verbatim.

For the analysis, we used qualitative content analysis, according to Mayring [74] and Kuckartz [75], as well as a deductive–inductive category system relating to the research questions (Table 1).

The involved researchers from the three countries/regions worked with the same category system, which was finally developed by comparison of the individual preliminary work in several virtual round table meetings. Furthermore, they matched and discussed selected estimates and interpretations or questions as well as the presentation of the research results analogous to the methodological, descriptive and explorative, approach. The researchers paid special attention to cross-case comparisons and selected numerous quotations to substantiate the results.
Table 1. Category system.

<table>
<thead>
<tr>
<th>Main Categories</th>
<th>Sub Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ESD activities/programs/curricula</td>
<td>e.g.,</td>
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<tr>
<td></td>
<td>• school without significant/comprehensive ESD implementation (&quot;not present&quot;)</td>
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<tr>
<td></td>
<td>• schools with an extensive ESD implementation (&quot;present&quot;)</td>
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<td></td>
<td>- numerous (individual) activities</td>
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<td></td>
<td>- programs/curricula</td>
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<td></td>
<td>- work as part of an &quot;ESO network&quot;</td>
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<td>2. Obligation of ESD</td>
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<tr>
<td></td>
<td>• obligatory (by district, state or federal government)</td>
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<td></td>
<td>• optional</td>
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<td>3. Hindering or preventing factors</td>
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<td></td>
<td>• internal factors</td>
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<td></td>
<td>• external factors</td>
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<td>4. Role of human resource management</td>
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<td></td>
<td>• possibilities within the framework of HR development</td>
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<td></td>
<td>• limits within the framework of HR development</td>
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<td>5. Organizational development</td>
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<td></td>
<td>• organizational anchorage</td>
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<td></td>
<td>- mission statement</td>
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<td></td>
<td>• level of participation (stakeholder)</td>
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<tr>
<td>6. Principal’s competencies</td>
<td>e.g.,</td>
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<tr>
<td></td>
<td>• communication skills</td>
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<td></td>
<td>• leadership skills in different areas, understood as a &quot;competence bundling&quot;</td>
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<td>7. impact of COVID-19</td>
<td>e.g.,</td>
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<td></td>
<td>• negative impact</td>
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<td></td>
<td>• positive impact</td>
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</table>

6. Findings

This section presents the findings of the study. Significant quotations from participants are included.

6.1. Structural Anchoring of ESD (Activities/Programs/Curricula)

In this study, in the complete overview of all three countries, a wide range of ways to bring ESD to schools has been identified, a result that confirms the results of our previous studies. Principals reported single lessons, projects, or courses in school subjects, work in school farms, excursions or invitations of external experts, or even consistent curricula with ESD issues in every grade level (see Table 2). These activities also involved parents and external partners of the school: „We have carried out the, Garbage Recycling’ project exploration course according to the age of the children and grades, allowing children, families and schools to participate and interact effectively!” (CN_SP5, I. 1 ff.). „The development of cooperative courses between the museum and the school allows students to gain inner experience and improve their abilities in participation” (CN_SP27, I. 1 ff.). The participation of the environment and the wider community of a school seems to be an important success factor: „We involved the village, of course. [ . . . ] Because our school is so small, it works only with a wide range of partners [e.g., parents, countrywomen, clubs]. Otherwise, the essential idea keeps short, I think“ (GER_SP2, I. 103 ff.). „We were the first fairtrade-school [ . . . ]. This gave us an incredible impetus, [ . . . ], and then you get these networks, and they are quite important as external cooperation partners” (GER_SP3, I. 155 ff.).
### Table 2. Selected ESD examples of realization in schools.

<table>
<thead>
<tr>
<th>ESD-Examples</th>
<th>China</th>
<th>Germany</th>
<th>USA</th>
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<tbody>
<tr>
<td>“Fruit picking activities; vegetable planting activities; ecological school</td>
<td>“Every class has to do two projects a year [ . . . ], training for the</td>
<td>“Saving the environment, recycling, [ . . . ] We did World Health day</td>
<td>“We do have a an international baccalaureate program at our school.</td>
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<td>construction project [ . . . ]”</td>
<td>stuff is obligation, and one ESD-modul is with parents”</td>
<td>where we learned about exercising but we also learned about taking</td>
<td>So IB has a lot of stuff that goes with global competencies. [ . . .</td>
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<td>(CN_SP1, I. 1 ff.)</td>
<td>(GER_SP2, I. 147 ff.)</td>
<td>care of the earth around us” (US_SP2, I. 274 ff.)</td>
<td>[W]e have had like Environmental clubs and things like that [ . . . ]</td>
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<tr>
<td>“[ . . . ] courses [ . . . ]—topics such as resource reuse, protecting the</td>
<td>“ESD-concept [initially in primary school], From classroom to learning</td>
<td>“[ . . . ] [W]e do have recycling program that we take care of with</td>
<td>“We are a Leader in Me school [ . . . ] not 100% sure if the leader in</td>
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<td>environment and caring for the environment are discussed”</td>
<td>landscape’, competence oriented ESD and teaching” (GER_SP1, I. 157 f.)</td>
<td>cardboard. And, we also have a [ . . . ] energy conservation policy</td>
<td>me program would fall under that ESD category [ . . . ]” (US_SP5, I. 233 ff.)</td>
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<td>(CN_SP4, I. 1 ff.)</td>
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<td>and program where we manage electrical usage, and try to reduce that”</td>
<td>“We are a Global Ready school [...] And, what we have done, we’ve made</td>
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<td>“School cultural management, the cultivation of students’ innovative</td>
<td>“Two activity days a year, and that’s the main thing I think—to leave</td>
<td>(US_SP4, I. 228 ff.)</td>
<td>a move towards teaching our staff and teaching our students about the</td>
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<td>literacy, the cultivation of students’ financial and economic literacy [ . .</td>
<td>the usual lessons, [ . . . ] partially planned as major events in the</td>
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<td>UN Sustainable Development goals” (US_SP6, I. 208 ff.)</td>
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<td>. . . ]”</td>
<td>canteen” (GER_SP3, I. 97 ff.)</td>
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<td>“Cultivate young children to care for the environment, learn to classify</td>
<td>“Obvious, extracurricular partners, extracurricular places of learning</td>
<td>“We are a Leader in Me school [ . . . ] not 100% sure if the leader in</td>
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<tr>
<td>waste and distinguish which is useful [ . . . ]”</td>
<td>play a big role in this concept” (GER_SP9, I. 439 ff.)</td>
<td>program would fall under that ESD category [ . . . ]” (US_SP5, I. 233 ff.)</td>
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<tr>
<td>(CN_SP5, I. 1 ff.)</td>
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<tr>
<td>“Yes, steam courses are integrated into regular classes, and zero-carbon</td>
<td>“Network—that plays a big role. And maybe that’s the quintessence,</td>
<td>“We are a Global Ready school [...] And, what we have done, we’ve made</td>
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<tr>
<td>schools are piloted”</td>
<td>actual be a network” (GER_SP4, I. 552 ff.)</td>
<td>a move towards teaching our staff and teaching our students about the</td>
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<td>(CN_SP7, I. 1 ff.)</td>
<td></td>
<td>UN Sustainable Development goals” (US_SP6, I. 208 ff.)</td>
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Additionally, the results provide evidence for significant differences between the three countries, especially in terms of the type and scope of central requirements and the consequences in schools.

In the United States, where ESD is not externally mandated, ESD is often viewed as an extracurricular activity that is isolated and sometimes embedded into other programs. Science is viewed as the one content area that is expected to support ESD. Nevertheless, some schools developed school profiles or modules which show clear links to ESD (“Global Ready school [ . . . ]—we’ve made a move towards teaching our staff and teaching our students about the UN Sustainable Development goals”, UA_SP6, I. 208 ff.).

In China, there are no or only a few obligatory requirements regarding ESD from the district, state, or federal government. The implementation of ESD is within the responsibility of the individual school. Our study shows that this has a clear impact on the implementation of ESD, which is perceived as something additional and is not supported by official policies (“The above activities are not authorized by the government. The main reason for the implementation of sustainable development education activities in our school is based on our responsibility for education”, CN_SP9, I. 11 ff.).

In Germany, ESD is given high priority in national and state policies (level of the Conference of Ministers of Education and Cultural Affairs); in addition (for example, in Baden-Württemberg), there are guiding perspectives (“Leitperspektiven”) anchoring ESD as part of the obligatory education plan [76]. As a result, in many schools, aspects such as the school’s mission statement, school program, a common vision, or the appearance on the school homepage are central elements to underline the importance of ESD for the school community.
Furthermore, various internal and external hindering or preventing factors were identified. Many principals described “classic” reasons, such as the lack of time, resources, or support, comparable with previous studies. In addition, principals mentioned various other obstacles that can hinder the introduction of ESD.

In the US, performance pressure is a weighty reason why ESD was not given high priority, not least because of the COVID-19 pandemic, which was also mentioned in several interviews as a hindering factor. Math and literacy are prioritized, and the principal’s job security often depends on meeting certain performance levels in students’ reading and writing. Furthermore, several principals mentioned budget problems (“One thing [ . . . ] is tight budgets [ . . . ] I think they affect the capital budget in upgrades to things [ . . . ] like solar panels or other renewable energy sources. And another restriction for the last three years I’ve worked in ‘low performing schools’”, US_SP4, I. 309 ff.).

In Germany, some principals stated that advertising for and finding teachers with appropriate competencies for ESD required a lot of time and considerable administrative expense. One principal mentioned that teachers are on load limits and that he needs flair to handle the situation.

6.2. Human Resource Management (HR)

The second question broached the issue of the role of human resource management in implementing ESD activities/programs/curricula, which has, of course, multifarious linkages to the follow-up question (4.3). Significant similarities between the countries were noticed as well as differences within subsamples.

In all three countries, principals pointed out that it is important to support teachers and their professional development. It is decisive to foster their motivation by recognizing their individual strengths and interests and to assign tasks accordingly: “I think knowing your staff [and] knowing what they’re passionate about in their personal lives—especially if somebody has this [sustainability] as an interest—is more likely to gain student involvement” (US_SP1, I. 494 ff.). Training and other forms of personal development can help to develop competencies and motivation of teaching staff. Furthermore, team building is considered highly important: “I try to form teams in which the synergistic effects are also noticeable. Many teachers in high school have never experienced synergistic effects” (GER_SP3, I. 301ff.).

In the USA and China, principals have more influence on the recruiting of personnel. Consequently, principals mention and emphasize the importance of recruitment (“Absolutely critical. Anything related to that. You want to have the right person. You want people who love science. [ . . . ] I am a recruiter when it comes to personnel”, US_SP2, I. 321ff.; “Hire relevant new colleagues [ . . . ]”, CN_SP7, I. 28; “Rigorous entry system”, CN_SP30, I. 16). One Chinese principal summarized: “Human resource management is an important guarantee for realizing the sustainable development of the school” (CN_SP21, I. 28 ff.). In Germany, leadership and “subtle intuition” in the context of human resources development were emphasized. Staff are mainly assigned to schools by the school authorities, and some principals expressed their wish to have more influence on the recruiting of their staff and criticize the current regulations that restrict principals’ possibilities to hire teachers: “As long as principals cannot select, hire and lay off their staff, they do not have all issues of school management under control” (GER_SP6, 78. ff.).
6.3. Organizational Development (OD)

Implementing ESD in a school requires activities focused on developing values, culture, structures, and processes of the school as well as the curriculum. The subsequent question of our study addressed the role of OD in implementing ESD.

Principals in all three countries pointed out that change management has high significance within this context. They also emphasized that all activities of OD are closely connected to human resource management and that one has to bear in mind that these two fields of activities are affecting each other.

US principals pointed out the significance of school improvement teams which bring innovations to the school, but that it is also important to create a supportive school culture. Both culture and organizational structure can support ESD initiatives. The performance pressure of teachers was another theme that emerged, and the main emphasis of the school programme, in their eyes, is to reach requirements in the main subjects (see 6.5).

Several Chinese principals mentioned three-year or five-year development plans for their schools. They also confirmed the great importance of HR and OD. One principal said: “Organizational development is the most important way […] and vision, mission and culture are important means to unite people and implement the school’s development strategy” (CN_SP17, I. 30 ff.).

In Germany, many schools developed a specific school curriculum for ESD. Networking also has an important role (see Section 5). Furthermore, the meaning of the ‘Whole System Approach’ was emphasized. As one principal put it: “It so happened that from the very beginning of the development process, we worked with the ‘Whole System Approach’ tool as sort of a set that basically wants to look at the whole system of a school. It’s basically about four fields: It’s about the topic of teaching. It is about the topic of rooms and equipment. It’s about the topic of personnel development in the third field, and the fourth field, then the topic of external partners” (GER_SP1, I. 84. ff.).

Within this sample, it is also evident that the current activities and programs at various schools have a “history”, which means that the current high level of the implementation of ESD is a result of development over many years (see Conclusions). For example, one school has been a CLUB OF ROME school for almost 20 years. Under the motto “think globally—act locally”, pupils learn to think out of the box, to reflect global perspectives, and to spring into action in their local environment. Another school has been a FAIRTRADE school for approximately 10 years. This campaign anchors fair trade in everyday school life and raises awareness for sustainability issues among students. For various principals, joining an ESD network was the next logical step in their work and commitment to ESD.

6.4. Principals’ Competencies

To create sustainable ESD in their schools, school leaders need leadership skills in different areas, understood as a “competence bundle”. Different “components”, for example, expertise in ESD, communication skills, or competency for change, were enumerated in this context.

The basis is sufficient professional and background knowledge in management, leadership, and ESD. In particular, change management skills seem to be very important for sustainable success. The principal must initiate and support processes of change for their schools as organizations. He or she must take into account the strengths and preferences of individual teachers, but he or she must also have a wider horizon and consider the whole of the school.

Some quotations illustrate even more facets. A German principal stated: “A principal needs pedagogical skills and management skills …” (GER_SP6, I. 112ff.). A US principal emphasized: “Be innovative. Trusting. Be resilient. Things will go wrong” (US_SP2, I. 494 ff.). Additionally, a Chinese principal pointed out: “Have the spirit of continuous pursuit of knowledge. Be able to accept new things. Have the spirit of innovation and inquiry. Trust partners, be able to brainstorm ideas, and lead the team to a common goal” (CN_SP31, I. 71 ff.).
6.5. Impact of COVID-19

The final question of our study touched on our main focus of interest: “In what ways has the COVID-19 pandemic impacted ESD activities/programs/curricula in your school?”

As was to be expected, a significant impact of COVID-19 could be identified in all three countries. Many of the ESD activities had to be abandoned. As a result, educational and pedagogical issues had more and more attention. Additionally, the question of how to realize online education was urgent.

In detail, some interesting findings and characteristics could be made and identified within each country. In the USA, principals reported that the COVID-19 pandemic changed the focus of the school. Principals reported that they had to prioritize supporting students’ social and emotional needs and leading the way. As a logical consequence, ESD issues became more or less meaningless.

In China, lots of outdoor activities or visits were cancelled, and the depth and breadth of school activities and courses became particularly difficult to achieve. Many principals furthermore took the view that the effects of online courses were limited. Practical teaching, courses and (especially outdoor) activities, or mass gatherings were affected (“Courses are constantly being interrupted, and resources available are reduced, especially for outings”, CN_SP4, I. 47 ff.; “There is a certain impact, for example, intensive activities cannot be carried out, and the online teaching effect is not good”, CN_SP26, I. 29 ff.). The combination of online and offline teaching was discussed critically, and the desired teaching effects were questioned. Individual principals referred to the psychological effects on teachers and students (“In particular, the overly formatted requirements in the process of epidemic prevention and control have obvious formalism, which has a certain negative impact on the concept of sustainable development”, CN_SP21, I. 58 ff.). Only single opinions stated a positive impact (“Make teachers more aware of sustainable development and use this as a material for sustainable development education”, CN_SP18, I. 39 ff.; “[…] interest in textbook learning has weakened, but the discipline of student life has improved”, CN_SP32, I. 28 ff.).

In Germany, many similar negative effects were reported. Many principals spoke of canceled activities or the effort to map them online or in other ways. Many schools reached a standstill, for example, when the development of the school’s ESD program was abruptly halted by the pandemic (“We made the first step in 2019. Then there was more or less standstill for almost two years”, GER_SP9, l. 38ff.). Principals also critically questioned the results of online teachings: “There is nothing like the primary experience of nature during outdoor activities”. One principal, who only recently took over his position in a new school, had the clear impression that ESD, according to the guiding perspectives in the curriculum of the state (see 6.1), was implemented only in certain subjects or even by individually engaged teachers. Conversely, he noticed the absence of a consistent school concept for ESD. In his opinion, due to COVID-19, the overall situation became even worse, and pedagogical work became significantly more important. Another principal pointedly stated that the COVID-19 pandemic “has bluntly revealed the total grievances of the school system” (GER_SP7, l. 401ff.).

An interesting finding in the German sample is that anchoring ESD in official documents such as the education plan (see above 6.1) does not guarantee the comprehensive implementation of ESD at the individual school. Anchoring ESD in the context of networks, however, seems to increase the likelihood that the topic will not be lost sight of “after COVID” and will be taken up extensively or maybe even deepened, if possible.

On the other hand, various positive effects could be identified, too.

For example, one principal mentioned the already existing outstanding digital equipment before the pandemic was a great help for organization and facilitated online teaching during the COVID-19 pandemic (“We already had a fast internet connection. We had […] many devices. We had fitting networks and platforms to communicate […]” (GER_SP4, l. 454ff.). Most of the positive effects have a correlation with the level of implementation and
memberships in networks with an explicit connection to ESD, which will be discussed later (see Section 5).

A number of principals of schools with an ESD profile stated that the pandemic even encouraged them in their intention, quasi on the basis of the motto “Now more than ever”. One principal pointed out: “There is no ‘it doesn’t work’ since the COVID-19 pandemic. [. . .] For our self-confidence it was a gigantic booster” (GER_SP7, l. 401ff.). This especially applies to the work on ESD as a “basic principle”. One principal pointed out that the school wants to increase participation, a core idea of ESD.

The members of one certain network agreed to continue the work related to ESD despite the COVID-19 pandemic situation as well as possible, or rather to resume work as soon as possible. In another network, the schools have an obligation to comply periodically with quality requirements to remain in the network, and that also ensures a certain level of quality of the ESD program.

7. Discussion

Current discussions and policies on ESD shift the focus from teaching and learning to the institutional level and to integrating ESD into the whole system of a school (see 3.2). Against the background of the whole school approach and the three-way model of school development (see Figure 1), the results of our study indicate that a number of participating principals are already well on the way to transforming their schools into holistic learning environments for ESD and to even develop a specific ESD profile. In their schools, they have organized various activities in a participative process of school development. In addition to addressing ESD in single lessons or isolated teaching projects, ESD is also integrated into the school’s curricula and is considered in processes such as hiring teachers or competency development. Included in many activities were not only the principal and teachers but also non-pedagogical staff, parents, and external cooperation partners. The current study also identified fundamental characteristics referring to the liability of implementing ESD in schools. In the USA and China, ESD is not externally mandated. Despite that, several schools in the subsamples made noticeable efforts related to ESD and ESD goals. In Germany, on the other hand, where ESD as a guiding perspective is part of the obligatory education plan, not all schools in the subsample made significant efforts related to ESD. That shows that official regulations do not necessarily ensure the successful implementation of ESD.

That raises the question of which success factors can affect the implementation of ESD in each school, regardless of countries or mandates. The authors assume that the role of the principals and the involvement of the school and its environment is more effective than superordinate mandates or requirements. They are unquestionably able to support involvement, but they provide no sure-fire success. In this context, the authors attribute the implementation of the whole school approach a clear greater significance (see 3.2), and in line with Rolff’s model, relationships between teaching, personnel, and organizational development become apparent. For the greatest possible success in the implementation of ESD, the complex interplay of internal and external factors at the individual school must be taken into account.

Principals, as change agents, must have the right attitude towards ESD and many competencies to put the topic into practice. They need support, just like teachers. It seems to be desirable or even necessary to take this topic into account in initial vocational and extra-occupational training as well as support for schools. The lack of resources was often criticized by the principals.

Our study revealed that several German schools were part of a network of ESD schools. Participation in networks would not solve all the challenges, but it was apparently an important success factor. The German subsample illustrates that the networks bring advantages, among other things, clear and simple additional resources for the schools, e.g., external expertise, support by external persons or „manpower”, or the possibility to exchange knowledge or talk about challenges with like-minded persons. If the goal of
implementing ESD would be reached by means of school networks, it is furthermore rather a mission for the whole of society than a „single school“ or „teachers and pupils“. In this context, as already mentioned, leadership can make a difference. Principals have a key role in transforming a school towards more sustainability and to take into account the whole background of the sustainable development goals. In order to meet the requirements, principals need many competencies in addition to profound expertise.

As was to be expected, the COVID-19 pandemic considerably hampered many ESD activities and especially processes of school development. Surprisingly, various positive effects were reported, particularly in schools that already had a highly developed ESD profile.

In the context of the COVID-19 pandemic, especially in the USA but also in China, performance pressure for teachers occurred to be one weighty factor that led to prioritizing other tasks over ESD. This raises the fundamental question, beyond the three countries we are referring to, which school system and which educational goals are fundamental in a post-pandemic phase and which methods of evolution are required in order to shape a certain future?

As far as the limitations of this study are concerned, the biggest restrictions are associated with sampling. Since obtaining access to the principals during the pandemic was difficult, convenience sampling was used by the authors. The principals in the subsamples do not represent all principals in the respective countries.

Furthermore, the data from the interviews were self-reported by the principals. Systematic triangulation of the data was not implemented within the research design. In individual cases, further information (e.g., school homepage, internet platforms) was considered to check the data situation. On the other hand, the methodology provided rich data and allowed school principals to express their points of view, which was the goal of this study. The data allowed the authors to understand school principals’ perspectives on the research questions, especially with a deeper view of ESD and the impact of the COVID-19 pandemic in intended addition to the previous studies.

Finally, a survey design, in addition to this interview study, could provide a much larger sample and could increase the validity of the present results. For future research projects, it could also be important to determine which success factors are vital for implementing school networks relating directly to ESD in the context of state and district characteristics.

8. Conclusions

International programs and national laws are important measures, but they do not necessarily ensure that ESD is actually implemented in schools. They need to be broken down into state and district-wide strategies and activities. Even the anchoring of ESD in curricula does not suffice. Implementing ESD in schools is a multi-level project that requires the commitment and involvement of the global community, countries, states, districts, and every single school. ESD is a team task that necessitates the involvement of teachers and other staff, students, parents, and the wider community of a school.

However, ESD is also a leadership responsibility. The results of our study underscore the crucial importance of principals for the successful implementation of ESD in schools. Because of this, in the following, we suggest some possible activities to support principals.

Principal preparation and further education: ESD topics should be included in programs that prepare principals for their responsibilities, such as master programs or courses offered by the state. These programs should especially include issues surrounding the management and leadership of ESD: creating a vision and mission, change management, human resource management for ESD, etc.

Principal support: Participants of our study reported being overburdened by administrative tasks that are hindering them from focusing on ESD. School administration should reflect on how principals can be supported by reducing other responsibilities. If ESD is to
be prioritized, other tasks must be reduced. Resources are also a vital factor (teachers, time, and funding).

Networks: Our study revealed that being part of a network of schools that cooperate in ESD activities can be of particular help. School administrations might consider initiating and organizing more networks of this kind. Additionally, principals could possibly arrange partnerships themselves.

COVID-19 is a threat to ESD. In many schools, ESD activities totally broke down due to the pandemic. However, the study also revealed that some schools succeeded in keeping up their engagement in ESD despite COVID-19. Some were even encouraged to further pursue their involvement.

The implementation of ESD is a marathon, not a sprint.


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