

INTEGRATING SUSTAINABILITY IN K-12 SCHOOLS: THE GSF SCHOOLS MODEL

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ABSTRACT

In today's world, where environmental and social challenges are increasingly prevalent, the role of educational institutions in shaping responsible citizens has never been more crucial. The Global Schools Foundation (GSF) acknowledges this responsibility and developed the "5S of Sustainability" framework to instil environmental consciousness and social responsibility among students, while seamlessly integrating sustainable principles into all aspects of school operations and curriculum. This comprehensive framework encompasses five interconnected pillars: "Structure and Governance," "Students and Learning," "School Management and Operations," "Skill Development," and "Stakeholder Connect." Each pillar addresses essential elements such as effective governance structures, curriculum integration, resource management practices, skill development initiatives, and stakeholder engagement efforts. By prioritising sustainability within the school ecosystem, GSF aims to foster a generation of conscious, knowledgeable, and dedicated future leaders who actively promote sustainability in their communities and beyond. The framework emphasises the importance of hands-on learning experiences, student-led initiatives aligned with UNSDGs, and sustainable practices in school management and operations. To ensure the effectiveness of the framework, GSF has implemented a robust monitoring and evaluation system, with key performance indicators (KPIs) established for each pillar. Regular assessments provide valuable insights into the implementation and impact of sustainability measures, enabling continuous improvement and refinement of the programme. The success of the "5S of Sustainability" framework in GSF schools positions it as a replicable model for educational institutions worldwide. Its adaptability, scalability, and flexibility make it highly beneficial for schools seeking to foster environmental consciousness, social responsibility, and sustainable practices among their students and stakeholders. By adopting this framework, educational institutions can play a pivotal role in nurturing a new generation of environmentally aware and socially responsible global citizens equipped to address the pressing challenges of the 21st century.

Keywords: *Education for Sustainability, K-12 schools, Whole School Model.*

INTRODUCTION

Background of Global Schools Foundation

The Global Schools Foundation (GSF) is a pioneering organisation committed to revolutionising education by providing innovative learning experiences and fostering holistic development. Founded in 2002 by Mr Atul Temurnikar, (Chairman and Co-founder) GSF emerged as a response to the evolving needs of education in the modern world. With a focus on equipping students with skills for the digital age, GSF emphasises the integration of technology, industry frameworks, and sustainable practices into its educational approach. Driven by the belief that education extends beyond traditional classroom boundaries, GSF recognises the importance of well-rounded education, going beyond academics to foster personal growth, character development, and global citizenship.

Role of Sustainability Education

Sustainability education plays a vital role in preparing students for the complex environmental, social, and economic challenges they will face in the 21st century (Mohanty, 2018; Malik, 2018). Many established sustainability education programmes, which are implemented in diverse settings and adopt various formats, have demonstrated positive results in enhancing environmental knowledge, fostering favourable attitudes, nurturing environmentally conscious dispositions, and honing essential skills among their target audience (Hurd & Ormsby, 2020). Furthermore, these research studies indicate that environmental education can exert an influence on outcomes that are not solely centred on environmental issues, including those pertaining to academic achievement and civic engagement (Adroin et al., 2018).

Objectives

- Establish a comprehensive Environment and Sustainability Management System for our schools.
- Reduce environmental impact, forge community partnerships, and increase environmental awareness and responsibility among students.

LITERATURE REVIEW

Schools often embrace a range of sustainability frameworks to guide their efforts in infusing environmental, social, and governance (ESG) principles into their core operations, educational curriculum, and institutional ethos. Each framework serves as a strategic blueprint, steering the school community toward a more sustainable and responsible future.

One common framework is the "Education for Sustainable Development" (ESD) (UNESCO, 2014), which centres on integrating sustainability themes into the curriculum. ESD equips students with a profound comprehension of global challenges, nurtures critical thinking skills, and fosters responsible citizenship by enabling them to actively address real-world sustainability concerns. During UNESCO's World Decade of Education for Sustainable

Development and the Global Action Programme, significant progress was made in raising awareness about sustainability in schools (Muller et. al, 2021; UNESCO, 2017). Another widely embraced framework is anchored in the United Nations Sustainable Development Goals (UNSDGs) (United Nations, 2016). By aligning their initiatives with specific UNSDGs, schools engage in a concerted effort to contribute meaningfully to the broader global sustainability agenda. These goals, spanning poverty reduction, inequality alleviation, climate action, and more, guide schools' actions in cultivating a sustainable mindset among students.

The "Whole School" approach is a comprehensive strategy that underscores the integration of sustainability principles across all aspects of the institution (Barr et al., 2021). The first meeting of EU Working Group schools: Learning for Sustainability (2022) reviews the Whole School approach and expresses that it ranges from curriculum design and operational practices to fostering a culture of sustainability and engaging with the broader community, and that this holistic framework ensures that sustainability becomes inherent in every facet of the school environment. Additionally, The Berlin Declaration 2021 by UNESCO stands as a significant document underscoring the importance of Education for Sustainable Development (ESD) for everyone. It highlights specific challenges that the global community confronts and urgently advocates for necessary changes to comprehensively embed and enhance ESD across all educational settings and support the Whole School approach. Education for Sustainable Development (ESD)-active schools, as a specific category, often demonstrate enhanced school improvement procedures and more efficient organisational frameworks. As a result, they are better equipped to support hands-on teaching and pedagogical endeavours, setting them apart from conventional schools (Mogren et al., 2018).

In tandem, the "Global Citizenship Education" (GCE) framework focuses on instilling students with a deep awareness of global issues and nurturing a sense of responsibility as global citizens (UNESCO, 2015). By emphasising critical thinking, empathy, and proactive participation, GCE prepares students to actively contribute to a more equitable and sustainable world. Moreover, frameworks such as "BREEAM Education" and "ISO 14001 for Schools" prioritise the built environment's sustainability. BREEAM (BRE Global, 2021) assesses schools' environmentally friendly design, construction, and operation, while ISO 14001 guides schools in implementing comprehensive environmental management systems.

These frameworks collectively embody the commitment of schools to sustainable practices. Each one is a pathway towards embedding ESG principles into education, inspiring a generation of responsible individuals ready to address today's pressing global challenges. GSF has adopted learnings from these frameworks and incorporated them to the best of our abilities.

GSF'S FRAMEWORK

GSF's fundamental framework stemmed from the 'Whole School' approach. This framework extends beyond sustainability initiatives, permeating every aspect of an educational institution's structure and operations. It encompasses the integration of ESG principles into all facets of the school environment, including curriculum, infrastructure, culture, and community engagement. This approach recognises that sustainability is not a standalone concept but a mindset that needs to be woven into the fabric of education. Beyond academics, this approach

extends to school operations, promoting resource efficiency, waste reduction, and community partnerships that amplify positive impacts.

With the Whole School model as our guiding principle, we crafted our framework, drawing inspiration from both the Global Reporting Initiative (GRI) guidelines and the United Nations Sustainable Development Goals (UNSDGs). GSF's "5S of Sustainability" framework encompasses a set of five interrelated pillars that extend across the entirety of the school ecosystem. These pillars are intricately connected, forming a cohesive structure that influences and supports various aspects of the educational institution. Each pillar represents a fundamental component that contributes to the holistic integration of sustainability principles within the school's operations, curriculum, culture, and community engagement.

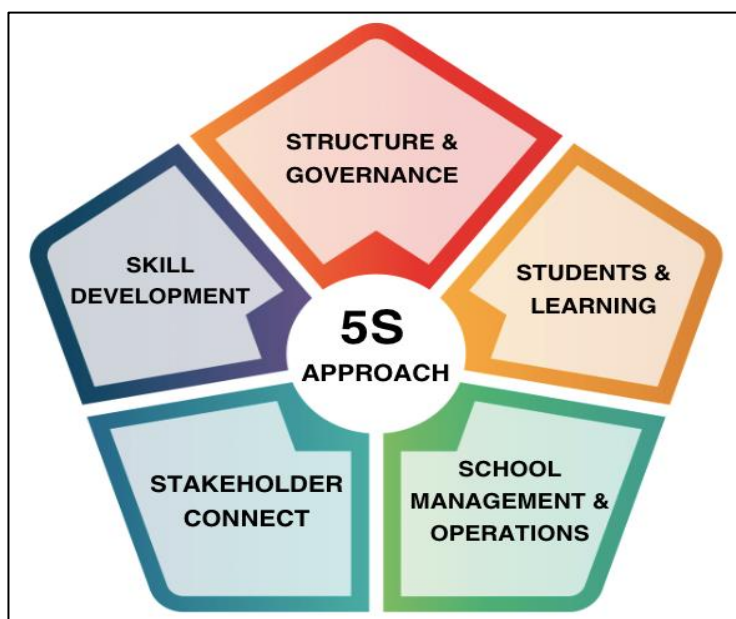


Figure 1: 5S Approach

Pillar 1: Structure and Governance

Effective governance is the foundation upon which sustainable practices are built. The "Structure & Governance" pillar ensures that schools have robust structures in place to address sustainability-related matters. This includes the establishment of sustainability committees, the appointment of sustainability ambassadors, and the development of sustainability policies and strategies. By providing comprehensive guidance, offering clear direction, and leading cohesive teams, this pillar ensures that sustainability is deeply embedded into our educational institutions.

Pillar 2: Students and Learning

The heart of any educational institution lies in its students and their learning experiences. The "Students & Learning" pillar of the framework recognises that schools have a vital role to play in cultivating future responsible citizens. Our schools aim to achieve this by seamlessly infusing sustainability concepts across the curriculum spectrum. Through this curriculum

integration, sustainability becomes an inherent part of various subjects, thereby crafting a holistic and immersive learning experience. Beyond the classroom, experiential learning opportunities and student-led initiatives aligned with the United Nations Sustainable Development Goals (UNSDGs) empower students to actively engage in sustainability efforts, fostering a sense of ownership and commitment towards the environment and society.

Pillar 3: School Management and Operations

Sustainable practices must extend beyond the classroom to encompass the entire school ecosystem. The "School Management & Operations" pillar stands as a testament to our dedication to sustainable practices. This includes efforts to reduce energy and water consumption, minimise waste production, and calculate and reduce the carbon footprint. Additionally, it emphasises the construction of green and sustainable buildings, the use of resource-efficient technologies, and the greening of the campus landscape, creating a truly sustainable physical environment.

Pillar 4: Skill Development & Innovation

In recognition of the importance of equipping both students and staff with vital skills, the fourth pillar, "Skill Development," comes into play. By facilitating regular training sessions, workshops, leadership lectures, and seminars, we ensure that all stakeholders possess the necessary tools to make informed decisions, think critically, foster creativity, and collaborate effectively.

Pillar 5: Stakeholder Connect

Sustainability is a collective endeavour that requires the engagement of all stakeholders, including students, staff, parents, and the community. The "Stakeholder Connect" pillar of the framework emphasises the importance of involving all members of the school community in sustainability efforts. Awareness campaigns, involvement in decision-making processes, community activities, and feedback mechanisms and reporting are some of the ways through which GSF schools foster a sense of shared responsibility and promote a collaborative approach to sustainability.

The synergy between these interconnected pillars fosters a comprehensive approach to sustainability. Each pillar serves as a critical support beam, upholding the overarching goal of providing a strategic path for schools to navigate their sustainability journey. This integrated approach equips educational institutions to cultivate environmentally conscious, socially responsible, and ethically aware individuals who are prepared to address global challenges and contribute positively to society. As the pillars harmoniously interact, they create a strong foundation upon which the 'whole school' approach thrives, nurturing a generation of informed, proactive citizens who are poised to shape a more sustainable future.

METHODS

To implement our framework, a structured approach has been devised. Initially, we communicated our sustainability policies and commitments to all stakeholders, including students. These were clear directions and expectations communicated by GSF's top management, thus laying a strong consistent foundation for sustainability. Next, dedicated campus teams, comprising both operational staff, teachers and students, were formed to drive sustainability initiatives. A thorough review of existing activities, aligning them with UNSDGs and our institution's specific sustainability areas, guided our actions. Then the schools crafted a plan with measurable objectives. Continuous monitoring and evaluation tracked our progress, and regular reporting fostered transparency, fostering a culture of sustainability within our institution.

To ensure the effectiveness of the "5S of Sustainability" framework, we have implemented a monitoring and evaluation system. Key Performance Indicators (KPIs) have been established for each of the five pillars, and they were assessed every quarter. This data-driven approach provides valuable insights into the implementation and impact of sustainability measures, allowing for continuous improvement and refinement of the program. The frequency of data collection varies according to the KPIs.

Our program was initially introduced in eight GSF schools in 2021, with subsequent expansion to fourteen schools in 2022 and twenty schools in 2023. To assess the impact of our programme, we regularly administered a concise questionnaire aimed at understanding teachers' knowledge and perceptions before programme commencement, and we continued this assessment every six months. Our selection of schools was guided by various factors, including campus maturity, campus leadership, age, and the range of classes offered. Specifically, we chose schools that have been part of GSF for at least three years and provide education up to at least the middle school level.

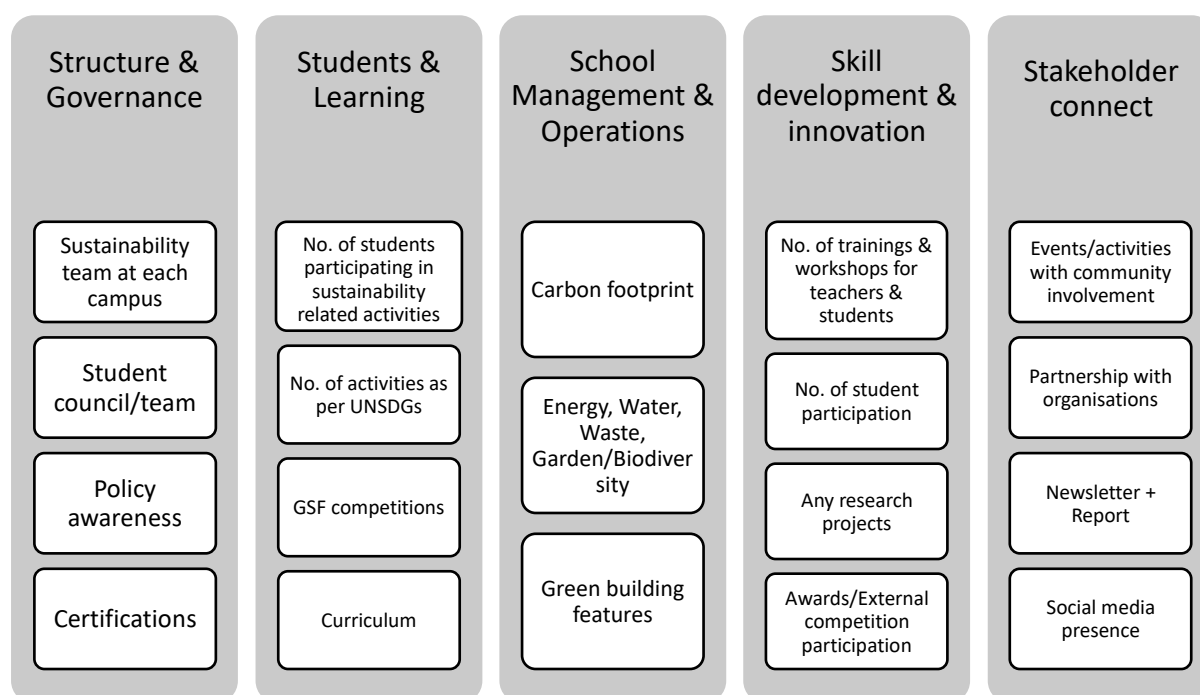


Figure 2: KPIs for each pillar

Data Collection

Dedicated sustainability teams at each campus were responsible for gathering school-level data in designated Google Sheets. Our surveys for awareness were conducted using Google Forms. At each of our campuses, we have taken a proactive approach to sustainability by forming specialised teams. These sustainability teams comprised individuals who were enthusiastic and dedicated to promoting sustainability within their respective school environments. These teams played a critical role in collecting and managing data related to various sustainability initiatives and metrics. To streamline the data collection process, we have implemented designated Google Sheets for each campus. These Sheets serve as organised and easily accessible repositories where our sustainability teams input relevant data. This data encompasses all our KPIs/ sustainability metrics, including energy consumption, waste reduction, water usage, and more.

RESULTS

Improvements in Perception

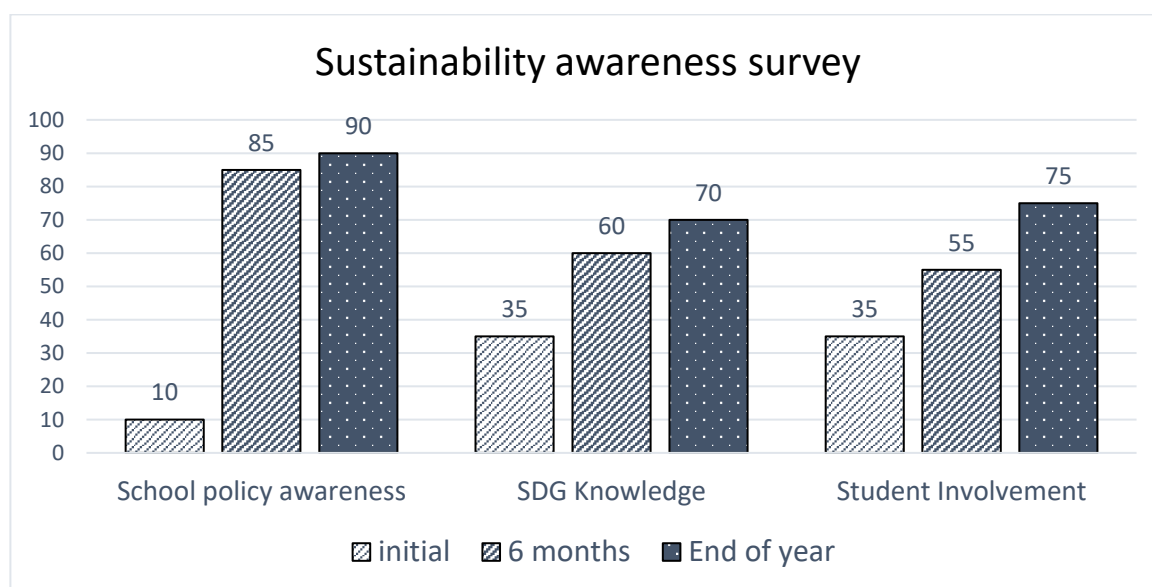


Figure 3: Graph depicting sustainability awareness for one school (Year 2023)

Upon the initiation of the program, an increase in teacher awareness is observed. Concurrently, there is a notable increase in student engagement, accompanied with an upswing in student activities and heightened participation in diverse academic competitions. It is imperative to note that data pertaining to university admissions subjects remains outstanding. Encouragingly, specific KPIs, notably in the domains of paper consumption and biodiversity, exhibited noteworthy enhancements. However, conclusive results for electricity, water, and waste management are pending. We intend to establish targets and implement monitoring mechanisms for these areas in the near future.

Sample Data from One of the Campuses

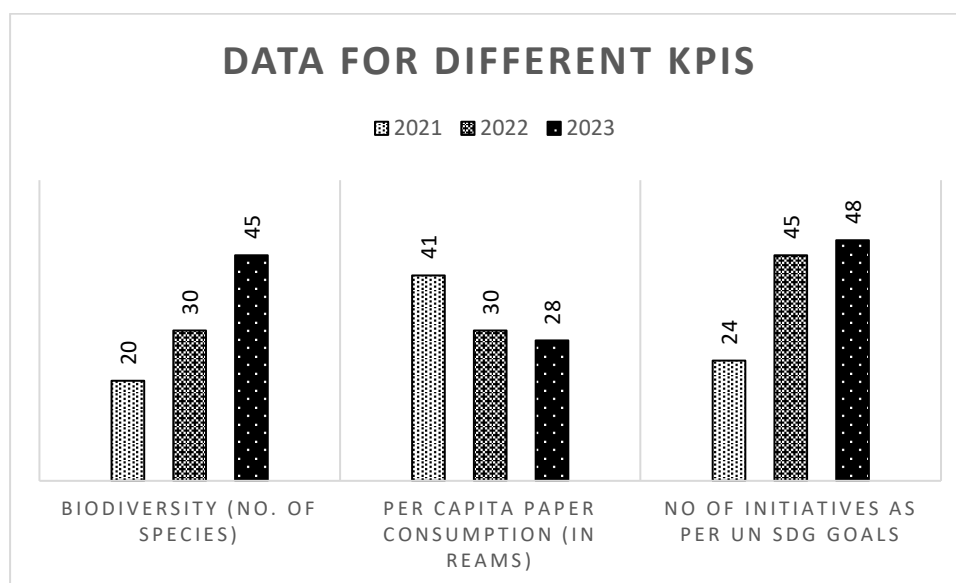


Figure 4: Graph depicting change in 3 KPIs after implementation of our programme

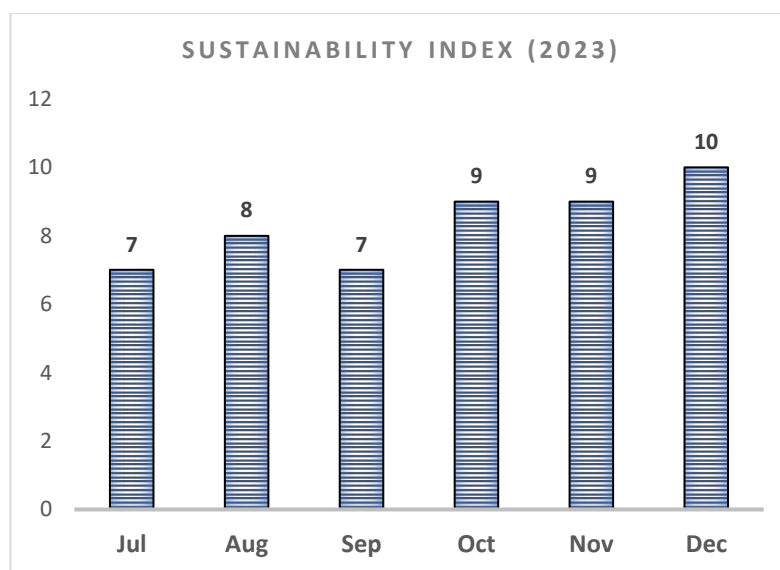


Figure 5: Sustainability index monitoring

Data monitoring and analysis are critical in the successful implementation of our framework within schools. It acts as a guiding compass throughout the sustainability journey by providing several essential functions. Firstly, it establishes a baseline, enabling schools to assess their current sustainability practices. Secondly, it would aid in setting clear and achievable sustainability goals. Thirdly, it serves as an ongoing monitoring tool to track progress and ensure that objectives are met. Additionally, data analysis informs resource allocation, allowing schools to invest strategically in sustainability initiatives. Lastly, it empowers schools to engage their community, make informed decisions, and continuously improve their sustainability efforts, resulting in a more environmentally conscious and responsible school environment.

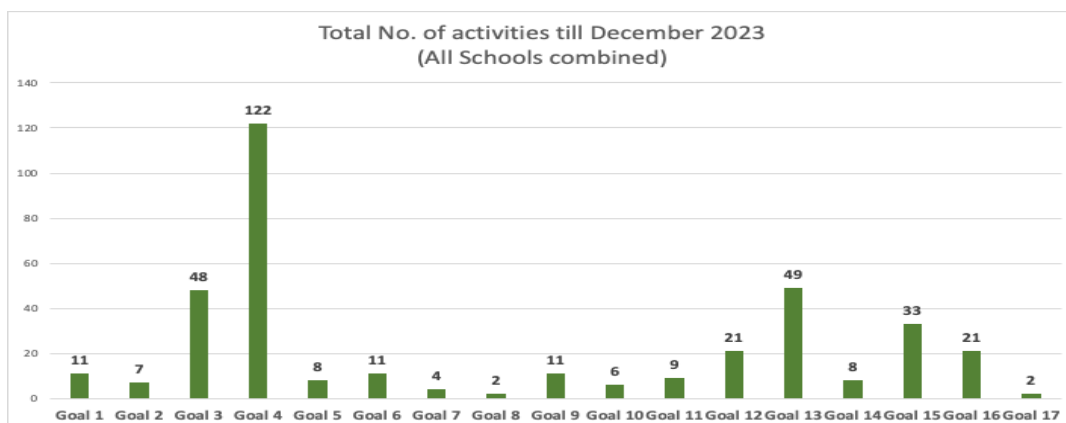


Figure 6: School activities monitoring as per UNSDGs

Student Projects

Our schools regularly organise various inter-school competitions related to sustainability for its students. Our students have also taken on the global stage to participate in international competitions. The success of our school's students in these competitions related to sustainability can be directly attributed to the impact and effectiveness of our comprehensive sustainability program. This program has not only equipped our students with the knowledge and skills needed to excel in these competitions but has also fostered a genuine commitment to environmental consciousness and social responsibility.

School Awards

Our pursuit for excellence and our commitment to best practices within and across industries have been recognised all over the world, with the foundation winning awards in Innovation, Best Practices in Education, Sustainability & Corporate Social Responsibility Activities, and Business and Performance Excellence from various reputable organisations. These awards acknowledge GSF's commitment to promoting sustainable practices among students and teachers and making a positive impact on the world.

Inaugural GSF's Sustainability Report

Sustainability reporting in schools holds the potential to achieve several significant outcomes; boosting student engagement in sustainability initiatives, establishing accountability for school sustainability efforts, structuring current sustainability projects, innovative approaches and potential courses of action, enhanced networking opportunities and heightened public visibility (Carbach & Fischer, 2017). By implementing our sustainability framework, we successfully obtained structured information, enabling us to generate our group's inaugural Sustainability Report.

Overcoming Challenges

Incorporating sustainability into schools presents several significant challenges that educational institutions need to address. These challenges include limited resources, both in

terms of funding and time, which can often be substantial hurdles. Teachers frequently face time constraints when covering their curriculum, and their level of interest and expertise in sustainability can vary widely. To address these challenges, we are actively leveraging technology through the development of our learning management system to optimise our sustainability efforts. Within our sustainability teams, we prioritise teachers who are passionate about sustainability to take on leadership roles. Due to the diversity of our KPIs, it can be challenging to make direct comparisons to determine which schools excel in terms of sustainability. Initially, our primary goal is to gather initial data for each KPI, allowing schools to subsequently develop customised plans tailored to their individual priorities. Additionally, we are in the process of creating a prioritisation plan to facilitate benchmarking among schools.

Achieving seamless curriculum integration with the UNSDGs is another challenge, given the substantial effort required to map all subjects. While the Primary Years Programme (PYP) curriculum is already mapped to the UNSDGs, we are working towards similar integration in other curricula. We are also actively promoting project-based learning, exposing students to real-world case studies. In our ongoing efforts to reduce our carbon footprint, we plan to incorporate more Scope 3 parameters in our calculations during the next cycle. To facilitate this, we are undergoing training to better understand the required parameters and to streamline the data collection process.

CONCLUSION & RECOMMENDATIONS

GSF has embarked on a journey towards sustainability, driven by a deep commitment to shaping responsible global citizens. Through the "**5S of Sustainability**" framework, GSF has not only outlined a strategic path but has also demonstrated its dedication to infusing sustainability principles into every facet of the educational ecosystem. Through diligent monitoring and evaluation, GSF ensures the effectiveness of its sustainability framework. KPIs drive progress assessment, allowing for continuous improvement and refinement. This data-driven approach empowers us to make informed decisions, adapt to evolving challenges, and demonstrate tangible outcomes.

The results observed in GSF schools are promising, with increased teacher awareness, heightened student engagement, and notable enhancements in specific KPIs. These outcomes validate the importance of a comprehensive sustainability program that integrates sustainability principles into education, operations, and the broader community. Collecting data presents challenges, particularly in terms of time constraints for teachers. To mitigate this issue, we have taken steps to involve non-teaching staff in the data collection process. Finally, the journey to produce a sustainability report for the group signifies a significant milestone. Sustainability reporting not only enhances transparency but also underscores GSF's dedication to its mission.

As the number of schools and students following this program grows, it becomes imperative to delve into additional factors to comprehend the effectiveness of the program across diverse regions. While sustainability metrics are essential, assessing the extent of genuine mindset transformation is equally crucial. Further study is required with the data collected from schools, to establish the impact of the program.

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