

Case Study

Sustainable Growing Futures

The Sustainable Growing Futures (SGF Wales) initiative was born in 2022. Officially launched by the university's Vice-Chancellor in July 2023, this pioneering project is focusing on sustainable practices and serves as testament to the preservation of essential skills that might otherwise fade into obscurity. SGF Wales is a collaborative effort uniting students, staff, and volunteers. Its mission is to address the sustainable demands and challenges of the twenty-first century by teaching the university community how to grow their own materials sustainably and with a minimal carbon footprint. SGF Wales develops physical botanical garden climates with a range of sustainable material sources to produce harvested crops for colour (dyes and pigments), fibre (paper making and cordage, flax spinning and linen cloth) and sustainable technology (solar driven robotics).

The academic purpose is to act as an interdisciplinary cross-school knowledge exchange, to include pedagogic integrity and teaching, and provide research-led curricula and new learning for undergraduate, credit-bearing modules and post-graduate research.

2024 Updates and Progress

Since its official launch, the project has grown to be a sustainable educational resource and has unfolded as a three-pronged purpose across the university; research-led teaching, academic research and wellbeing, while improving the campus environment and community engagement.

Community Engagement

The SGF project has provided the opportunity for student and staff engagement and learning of **new skills** together as a community, across the whole university – traditional craft skills and new technology, in practical hands-on or haptic terms. The project's presence has become regular at university campus Community Day events and monthly 'SGF Wales Meet & Greet' events have been held to provide information about the garden community and how to get involved and learn new skills. Moreover, regular workshops have been organised for related activities such as natural dyeing, spinning, flax processing, weaving, paper making, Sashiko (traditional Japanese stitch repair technique), printing, ink making and lake pigment making. The project has also hosted Community evening events such as the screening of Dylan Howitt's film *The Nettle Dress*, about textile artist Allan Brown's handmade nettle fibre dress. This evening brought together students, staff, researchers, volunteers, community gardeners, farmers, guild members, artisans, teachers and school children. Funded by the university's Sustainability Estates, a social event with refreshments enabled a sharing and network opportunity, with impact responses of learning and environmental awareness collected via a follow up questionnaire.

'This project has really affected the way in which I understand the artists place in environmentalism. Before, I must admit, that though I had a budding interest in sustainability in my everyday life I hadn't properly considered it in the context of my own practice. I think understanding the ways in which past civilisations and communities utilised the natural worlds pigments has given me a deeper understanding of how I can use the natural environment responsibly within my own practice.' - **Jem, 1st Year Art Student**

'I believe Sustainable Growing Futures to be a very exciting project' - **Professor Christopher Wallis, Head of Global Academy and Professor of Food Science.**

Academic & Research Outcomes

The project benefits have brought a university-wide campus community of practice together, sharing sustainability and carbon literacy awareness and responding to campus users, local community and university stakeholders' thirst and demand for new sustainable and environmental knowledge and action. SGF has provided research learning & teaching for undergraduate and postgraduate students with practical applications across 3 different university Schools – School of Art & Design, School of Technology and School of Sports & Health Sciences. Four new sustainable and credit bearing modules have been embedded into the undergraduate curriculum for cross discipline and self-elected modules.

- 1st year: The Growing Environment
- 2nd year: Eco Futures: Biomaterials and clay (natural dyes, mycelium and clay)
- 2nd year: 21st Century Challenges – Sustainable Growing Futures
- 2nd year: Web building – the SGF Project).

Collaborative academic funded research projects have been initiated driven by the SGF project.

- SGF Natural Dye & Pigment Research. Campus garden production of source dye materials and processing applications for student teaching and learning.
- SGF Fibre and Materials. Campus garden source of fibre materials for rope making, cordage, spinning, weaving and linen.
- Singing Compost Project. A solar-powered circuit installation by measuring the electrical activity of bacteria in the soil. Micro-powered electrogenic bacteria generate sound.
- Water Photo-purification Research Project. Photography processing pollutes water with silver nitrate. A sedimentary cleaning method and water-feeding system to grow pumpkins in the SGF garden will provide chemistry from the pumpkins, on site, to prevent the procurement of imported chemistry and water pollution.
- SGF Indoor Growing Research Project. Indoor environmental planting for production of gel and botanical dye sources.

Environmental Outcomes

The benefits of the production and harvesting of dye and fibre sources reduce the university's carbon footprint in line with the university's sustainability strategy and prevents the procurement of material for educational delivery purposes and student use. In reducing the requirement for the procurement and transportation of source materials, it ensures the consideration of resources and locality of materials. It makes us all think about why we need materials. How it impacts the environment? and what can we do to be more sustainable? The gardens bring flowering plants, trees and bushes to improve the immediate campus environment for people and nature, with insects and campus bees benefit from the pollinating botanicals. Green manure growing and compost production improves the soil. People using the SGF gardens report a sense of enjoyment and wellbeing, where once cars were parked. The gardens also promote impromptu conversations and provide the opportunity for people to discuss related sustainability and environmental matters with links to research and website information via QR coded information. These informal conversations are not to be underestimated and lead to new opportunities for further development and cross fertilisation of ideas, new learning and friendships.

Sector benefits

SGF project disseminates and shares sustainable carbon literacy practices, to support the university's strategic sustainability aims. It attracts student applicants and researchers to the university from learners interested in developing and learning about sustainability, the circular economy and future employment within the sector. applications to the university. Additionally, there is a growing PhD research interest cluster.

Obstacles and future plans

There is evidence of a large scale and positive shift in the demand for learning and attitude towards sustainability awareness, evidenced by the engagement of students, staff and local communities, with the university's Sustainability Team ambitions. The retention of traditional hand-skills for the benefit of the environment and wellbeing across the university is palpable and expressed through academic student work and research. Health and safety standard have delayed developments and use of the robotic equipment. This has now been resolved with protective shielding, using recycled materials. Also, wider use of rainwater collection issues, due to health and safety of water-but water storage and legionella disease to be resolved . Initial reliance upon volunteers as part of the core team and lack of dedicated staff hours has been difficult to maintain and organise. Recognition as a research group status has enable the development of a new management team and allocation of working hours plus paid student internship which will commence in Summer 2024.

