Research, Teaching and Outreach
for Sustainable Development (#VIP4SD)
“Target 4.7: By 2030, ensure that all learners acquire knowledge and skills needed to promote sustainable development, including, among others, through Education for Sustainable Development”
In 2025 the global student population in Further and Higher Education will reach more than 260 million  
- (Goddard, 2011)
Given our unique access to this relatively untapped research resource, and our responsibility to educate, equip and inspire our students to meet the global challenges facing our global society…

How can we best partner with our students now and in the future to leverage this potential to its full in the pursuit of the SDGs?
What innovative methods exist for embedding Education for Sustainable Development in undergraduate curricula?
Education for Sustainable Development
Education for Sustainable Development

- ESD was acknowledged as key enabler for SD at:
  - 1992 UN Conference on Environment and Development (UNCED) in Rio de Janeiro;
  - 2002 World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa;
  - 2012 UN Conference on Sustainable Development (UNCSD), also in Rio de Janeiro, Brazil.
  - 2015 COP 21 - Paris Agreement (Article 12)
“Education for Sustainable Development (ESD) is an interdisciplinary approach to learning that covers the integrated social, economic and environmental dimensions of the formal and informal curriculum.”

“ESD assists graduates who wish to develop the skills, knowledge and experience to contribute to an environmentally and ethically responsible society, and pursue a career that reflects those values.”
Why ESD?

• It’s what our students and HEIs want

- 70% would like to see sustainable development actively incorporated and promoted through all courses
- 81% say sustainable development is something they would like to learn more about
- 61% would accept a salary 15% lower than average to work in a company with a good social and environmental record
- 25% say they’ve never heard of the UN Sustainable Development Goals
Why ESD?

• It’s what our students and HEIs want
Why ESD?

- It’s what our students and HEIs want
- It’s what employers want

Business Reporting on the SDGs:
“A partnership to co-create the mechanisms for global business transparency and reporting on the SDGs.”

“70% of businesses plan to embed the SDGs within 5 years” PwC
ESD refers to the pedagogical approach of learning about and developing cross-cutting competencies and skills needed to work on achieving SDGs.

- Systems thinking competency
- Anticipatory competency
- Normative competency
- Strategic competency
- Collaboration competency
- Critical thinking competency
- Self-awareness competency
- Integrated problem-solving competency
Why ESD?

• It’s what our students and HEIs want
• It’s what employers want
• Institutional benefit
Why ESD?

• It’s what our students and HEIs want
• It’s what employers want
• Institutional benefit
• Moral imperative – and because it’s who we are
“We the Peoples” are the celebrated opening words of the UN Charter. It is “We the Peoples” who are embarking today on the road to 2030. Our journey will involve Governments as well as Parliaments, the UN system and other international institutions, local authorities, civil society, business and the private sector, the scientific and academic community – and all people. Millions have already engaged with, and will own, this Agenda. It is an Agenda of the people, by the people, and for the people – and this, we believe, will ensure its success.“

§ 48, Agenda 2030
It is “We the Peoples” who are embarking today on the road to 2030.

§ 48, Agenda 2030
Why ESD?

- It’s what our students and HEIs want
- It’s what employers want
- Institutional benefit
- Moral imperative – and because it’s who we are

“SDGs - Agenda 2030"

“a bold new global agenda to end poverty by 2030 and pursue a sustainable future for all”.

“...from these small beginnings, this institution may become a seminary of Sound Religion; Useful Learning; and Liberality of Sentiment.” –...
• SDG Academy – SDSN initiative to create and curate free, graduate-level online courses on sustainable development
• including health, education, climate change, agriculture and food systems, sustainable investment
What innovative methods exist for embedding Education for Sustainable Development (ESD) in undergraduate curricula?

Research-Based Education (RBE)
Relationships between Research and Teaching

- **Students as Participants**
  - Research-tutored: Curriculum emphasises learning focused on students writing and discussing essays and papers.
  - Research-based: Curriculum emphasises students undertaking inquiry-based learning.

- **Emphasis on Research Content**
  - Research-led: Curriculum is structured around teaching current subject content.
  - Research-oriented: Curriculum emphasises teaching processes of knowledge construction in the subject.

- **Teacher-focused, Students as Audience**

(Healey, 2009)
Research-Based Education, where students become research active, undertaking research and inquiry
- (Griffiths, 2007)

Students are encouraged to become ‘knowledge producers’ as opposed to ‘consumers’ in tackling real-world problems
- (Healey and Jenkins, 2009)
Vertically Integrated Projects

Research-Based Education (RBE)

Involves interdisciplinary, collaborative working and learning between students of different year groups and research staff on ‘real’ research projects with pathways to impact.
Research-Based Education (RBE)

Interdisciplinary
Research-Based Education (RBE)

Collaborative working and learning between students of different year groups and research staff on ‘real’ research projects with pathways to impact
Research-Based Education (RBE)

Collaborative working and learning between students of different year groups and research staff on ‘real’ research projects with pathways to impact
Research-Based Education (RBE)

Cross-faculty
Cross-year group working

Student-based Curriculum emphasises students undertaking inquiry-based learning
Research-led Curriculum is structured around teaching current subject content
Research-oriented Curriculum emphasises teaching processes of knowledge construction in the subject
Research-tutored Curriculum emphasises learning focused on students writing and discussing essays and papers

Emphasis on research content
Emphasis on research processes and problems

Teacher-focused Students as audience

Numbers represent the percentage of courses within each category.
Vertically Integrated Projects

Horizontal Integration (Multidisciplinary)

Research-Based Education (RBE)

Interdisciplinary

Long-term

Research-tutoried Curriculum emphasises learning focused on students writing and discussing essays and papers

Research-led Curriculum is structured around teaching current subject content

Research-oriented Curriculum emphasises teaching processes of knowledge construction in the subject

Teacher-focused Students as audience

Students as participants
Vertically Integrated Projects

Research-Based Education (RBE)

Horizontal Integration (Multidisciplinary)

Open to all Students

Multi-Disciplined

Team Based

Real Problems

Long-Term, Multiple Semesters

Research

Design

Develop

Deploy
The VIP Consortium: 35 Members So Far.....

**United States (24)**
- Arizona State University
- Boise State University
- Colorado State University
- Drexel University
- Florida International University
- Georgia Tech\textsuperscript{AAU,1}
- Howard University\textsuperscript{URM}
- Iowa State University\textsuperscript{AAU}
- Morehouse College\textsuperscript{URM,1}
- New York University\textsuperscript{AAU}
- Notre Dame
- Polytechnic Univ of Puerto Rico\textsuperscript{URM}
- Purdue University\textsuperscript{AAU,1}
- Rice University\textsuperscript{AAU}
- Stony Brook University\textsuperscript{AAU}
- Texas A&M University\textsuperscript{AAU,URM,1}
- UC Davis\textsuperscript{AAU,URM}
- University of Delaware
- University of Georgia
- University of Hawaii\textsuperscript{URM}
- University of Michigan\textsuperscript{AAU,1}
- University of Washington\textsuperscript{AAU}
- VA Commonwealth University
- Virginia Tech

**International (11)**
- Inha University (Korea)
- Malmö University (Sweden)
- Natn’l Dong Hwa University (Taiwan)
- Natn’l Ilan University (Taiwan)
- Riga Technical University (Latvia)
- Universidad del Norte (Colombia)
- Universidad ICESI (Colombia)
- Universidad Mayor (Chile)
- Univ. of New South Wales (Australia)
- University of Pretoria (South Africa)
- University of Strathclyde\textsuperscript{1} (Scotland)

**Pending (5)**
- Georgia State University
- NCA&T University\textsuperscript{URM}
- Reykjavik University
- Tuskegee University\textsuperscript{URM}
- UNICAMP
- Universidad de Chile

**Legend:**
- **AAU**: Member Institution (9)
- **URM**: Underrepresented Minority Institution (7)
- **1**: Program in place prior to Consortium establishment (5)

**Bold**: State of Georgia Institutions (3)
for Sustainable Development

- **Research-Based** Education for Sustainable Development

VIP

provides the means for embedding **RBESD** in UG curricula
Research-Based Education (RBE)

Horizontal Integration (Multidisciplinary)

VIP4SD Intro/Platform

New 20 credit on-line SDG module
Existing VIP4SD Teams – ~ 200 students

- Enterprise VIP
- ROVER
- STEM Education & Public Engagement
- Sustainable Energy for Development
- Drug Discovery
- TextLab
- Water and Sanitation Hygiene (WASH)
Energy is the **golden thread** that connects economic growth, increased social equity, and an environment that allows the world to thrive.

– Former UN Secretary-General Ban Ki-moon
Sustainable Energy for Development (SE4D)
Global problem in need of effective and innovative engineering solutions...
SE4D

AFFORDABLE AND CLEAN ENERGY

Support The Gambia Solar Project
www.strath.ac.uk/give2gambia
Bold, Ambitious, Innovative and Collaborative
Sustainable Energy for Development VIP

SE4D

Student Experience  ✔
Research  ✔
Impact  ✔
Research and Teaching Nexus… VIP4SD

**Research**
- Research on the SDGs
- Interdisciplinary and transdisciplinary research
- Innovations and solutions
- National & local implementation
- Capacity building for research

**Education**
- Education for sustainable development
- Jobs for implementing the SDGs
- Capacity building
- Mobilising young people

**Operations & Governance**
- Governance and operations aligned with SDGs
- Incorporate into university reporting

**External Leadership**
- Public engagement
- Cross-sectoral dialogue and action
- Policy development and advocacy
- Advocacy for sector role
- Demonstrate sector commitment
Our Vision

Institutionalise & Internationalise
The Main Challenges

- Academic regulations,
- Changes required to existing curriculum,
- Assignment of academic credits,
- Degree accreditation requirements,
- Staff engagement and resource,
- Student recruitment,
- Assessment and supervision
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- Morehouse College
- New York University \textsuperscript{AAU}
- Notre Dame
- Polytechnic Univ of Puerto Rico \textsuperscript{URM}
- Purdue University \textsuperscript{AAU,1}
- Rice University \textsuperscript{AAU}
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Our Vision

Institutionalise & Internationalise
Our Vision

Institutionalise & Internationalise

Global Consortium

Strathclyde VIP for Sustainable Development