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Inspiration and insight to change
minds and policy

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for

Sustainable Development



(#VIP4SD)

Dr Scott Strachan (scott.strachan@strath.ac.uk)

Department of Electronic and Electrical Engineering

17 June 2019

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What do we mean by Education for Sustainable Development (ESD)?

Role of Education in supporting the implementation of the SDGs

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Education for

Sustainable Development Goals

Learning Objectives



Acknowledgment of education as both “a goal in itself and a means for attaining all the other SDGs”

Education
2030



Role of Education in supporting the implementation of the SDGs

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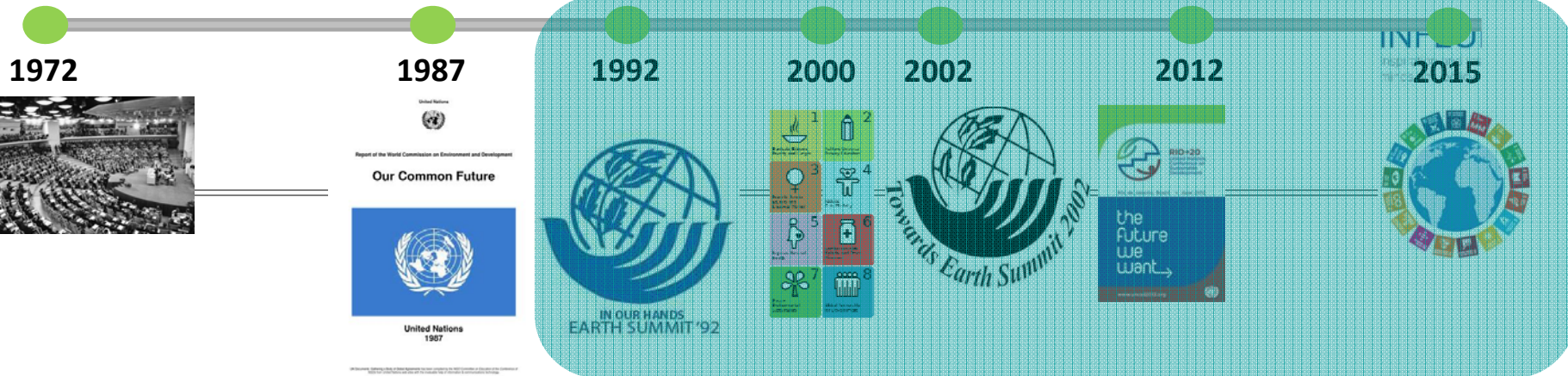
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“Target 4.7:

By 2030, ensure that **all learners** acquire knowledge and skills needed to promote sustainable development, including, among others, through

Education for Sustainable Development (ESD)”



Education for Sustainable Development was acknowledged as key enabler for Sustainable Development and formal pedagogy as far back as 1992

What is ESD?

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AdvanceHE



“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”



Education for Sustainable Development and the SDGs

Learning to Act, Learning to Achieve

Policy Brief

Advancing ESD Policy

January 2018



UNESCO Global Action Programme on
Education for Sustainable Development

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"Education will be the lynchpin of a sustainable development agenda whose success relies on individuals, throughout their lifetime, acquiring relevant knowledge and developing positive attitudes to address global challenges".¹

- Empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity.
- It is about lifelong learning, and is holistic and transformational education, which addresses -
 - **Learning content:** Relevant to today's world and global challenges; integrating critical issues, such as climate change, biodiversity, disaster risk reduction (DRR), and sustainable consumption and production (SCP), into the curriculum.
 - **Pedagogy and learning environments:** to advance the change in teaching and learning processes, bringing in approaches that 'stimulate pupils to ask questions, analyse, think critically and make decisions,' that are cooperative rather than competitive and that are more interactive, exploratory, action-oriented, real-world-based, problem-based, experiential and transformative learning.
 - **Societal transformation:** Empowering learners to transform themselves and the society they live in.

Education for Sustainable Development and the SDGs

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 - **Societal transformation:** **Empowering learners to transform themselves and the society they live in.**

These are also the competencies employers want to see us develop in our graduates

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Education for

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Education
2030

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
- 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”.



*“To contribute to the advancement of knowledge in society, to the social cohesion and to the reality of life in the place of useful learning...
Successful learning, the wider utility and of education” –*

Our role as educators...

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In 2025 the global student population in Further and Higher Education will reach more than **260 million**

“All of our hopes for a better world rest on young people”

- Secretary-General, António Guterres’

- (Goddard, 2011)



Agenda 2030

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Given our unique access to this relatively
untapped research resource, and our
responsibility to educate, equip, inspire and
mobilise our students NOW 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?



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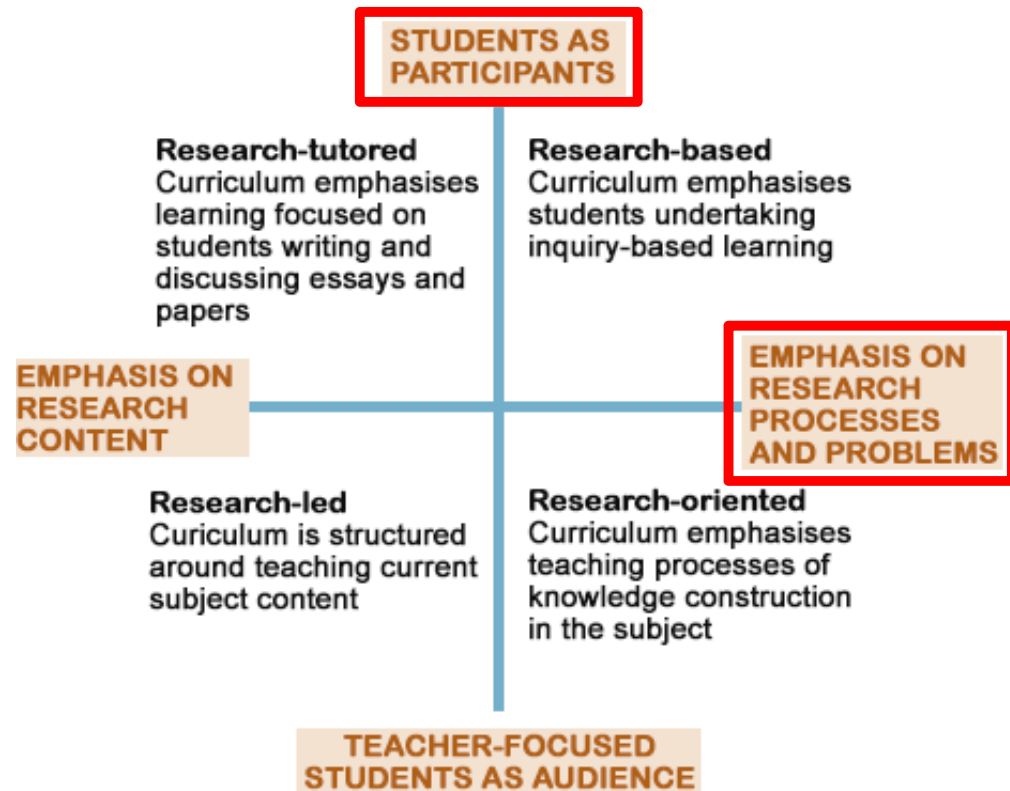
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What innovative methods exist for embedding
Education for Sustainable Development in
undergraduate curricula?

Research-Based Education (RBE)

Relationships between Research and Teaching



(Healey, 2009)

Research-Based Education (RBE)

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)

Research-Based Education (RBE)



Research-Based Education (RBE)

Involves **interdisciplinary**, collaborative working and learning between students of different year groups and research staff on 'real' research objectives, delivering impact.

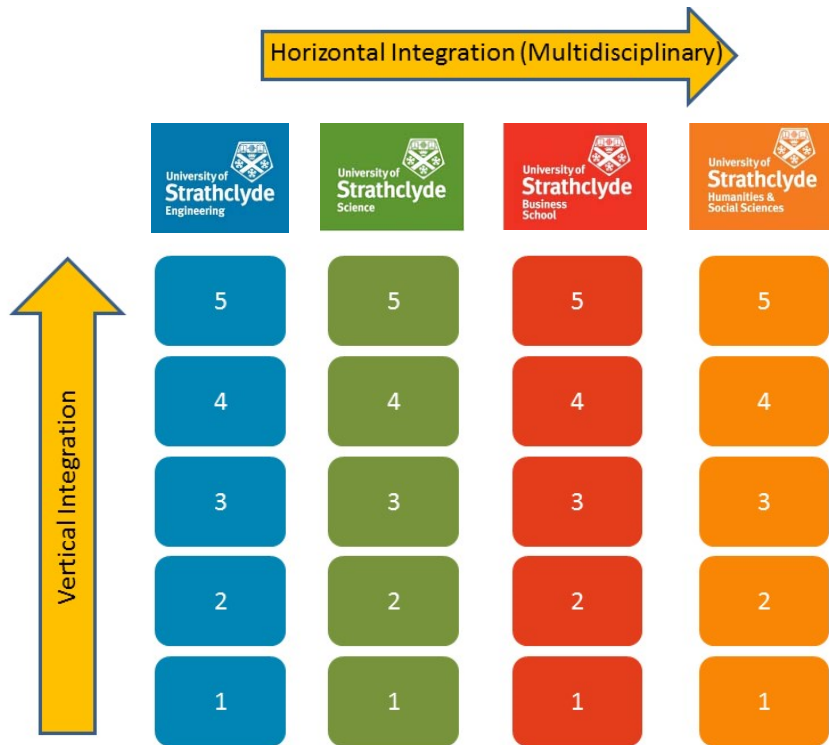
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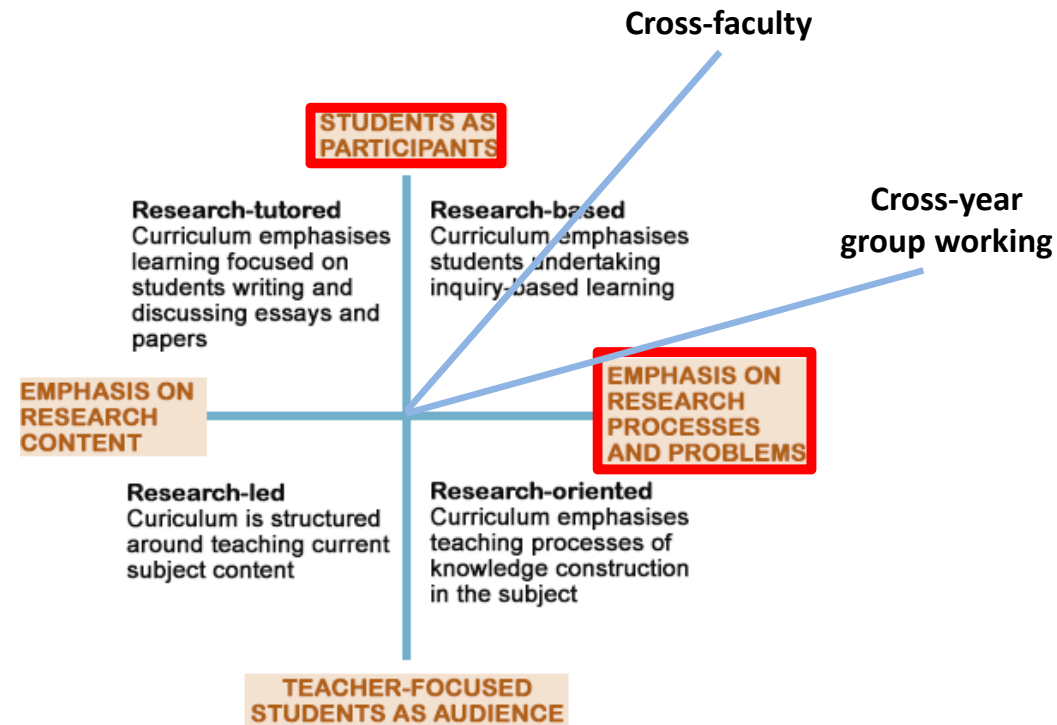


Research-Based Education (RBE)

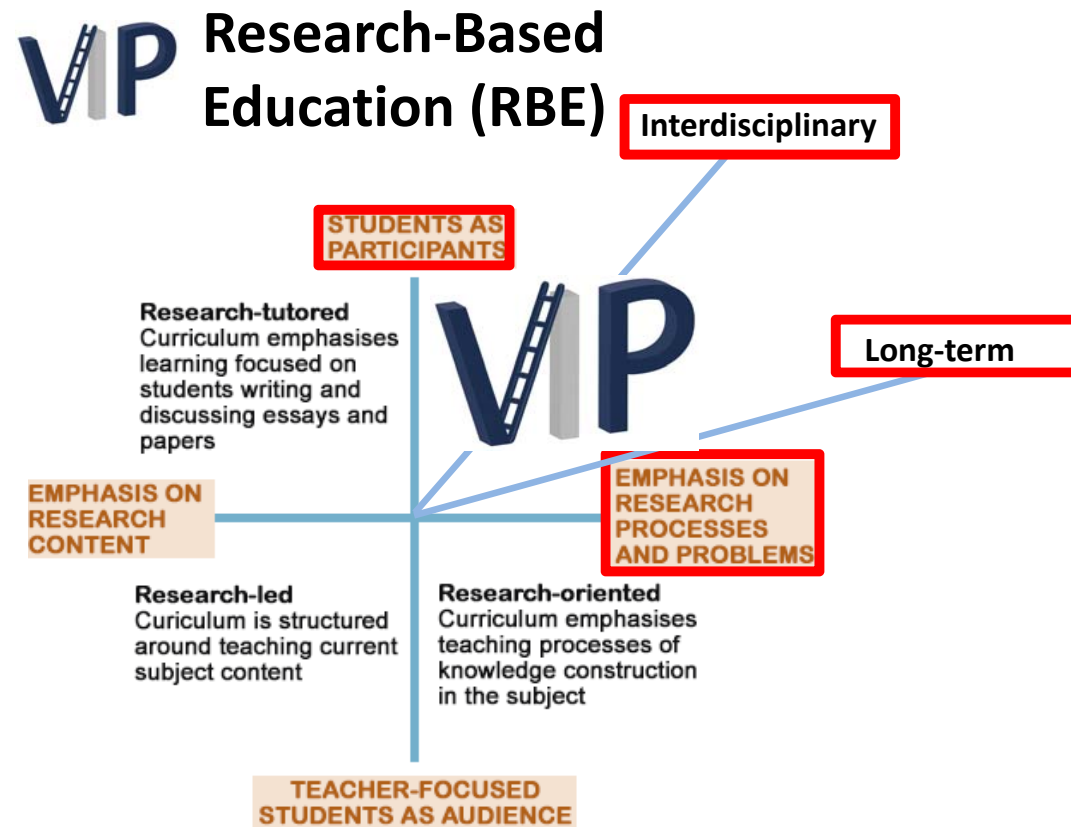
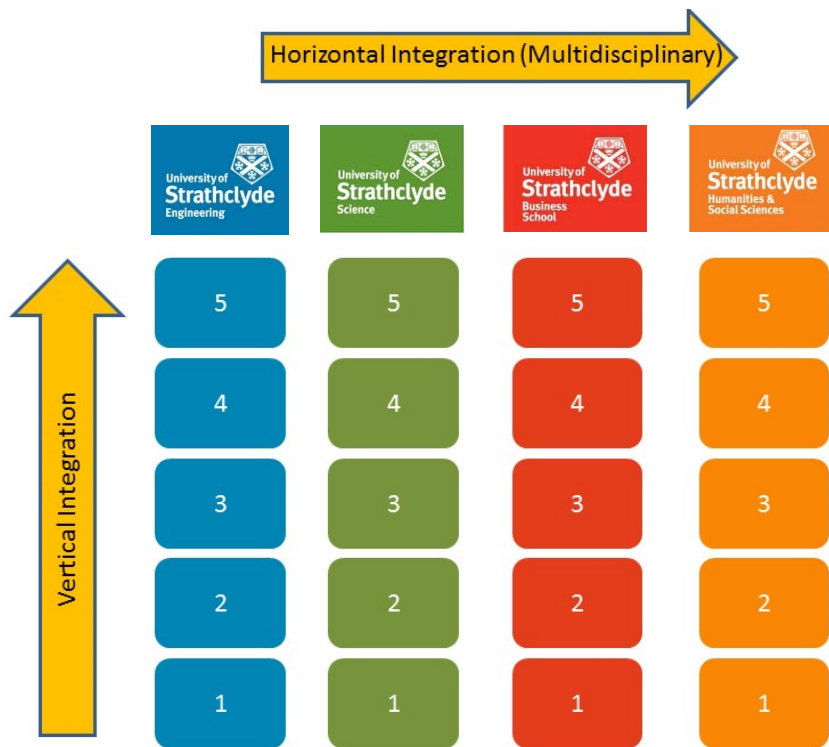
Involves interdisciplinary, collaborative working and learning between students of different year groups and research staff **on 'real' research objectives, delivering impact.**

Research-Based Education (RBE)

University of Strathclyde Engineering	University of Strathclyde Science	University of Strathclyde Business School	University of Strathclyde Humanities & Social Sciences
5	5	5	5
4	4	4	4
3	3	3	3
2	2	2	2
1	1	1	1



VIP Research-Based Education (RBE) Projects

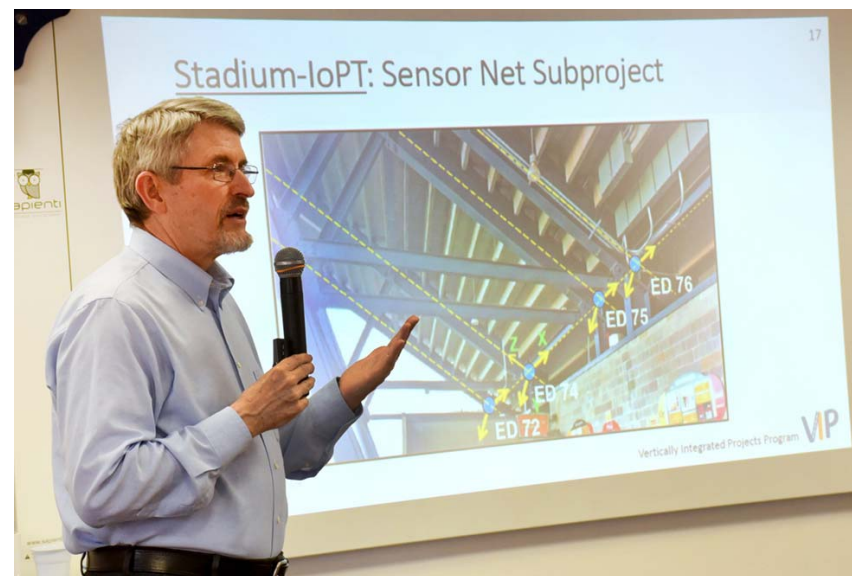




Where did VIP originate?



1101 Students
80 VIP Projects



Prof Ed Coyle

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

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United States (24)

- Arizona State University
- Boise State University
- Colorado State University
- Drexel University
- Florida International University **URM**
- **Georgia Tech** **AAU**,¹
- Howard University **URM**
- Iowa State University **AAU**
- **Morehouse College** **URM**,¹
- New York University **AAU**
- Notre Dame
- Polytechnic Univ of Puerto Rico **URM**
- Purdue University **AAU**,¹
- Rice University **AAU**
- Stony Brook University **AAU**
- Texas A&M University **AAU**, **URM**, ¹
- UC Davis **AAU**, **URM**
- University of Delaware

- **University of Georgia**
- University of Hawaii **URM**
- University of Michigan **AAU**, ¹
- University of Washington **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 ¹ (Scotland)

Pending (5)

- **Georgia State University**
- NCA&T University **URM**
- Reykjavik University
- Tuskegee University **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

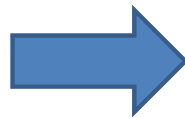
- **Research-Based** Education for Sustainable Development



provides the means
for embedding

RBESIDES in UG curricula

Means



End

VIP4SD at Strathclyde... presently

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150 - 200 students

8 VIP4SD projects



VIP4SD at Strathclyde... presently

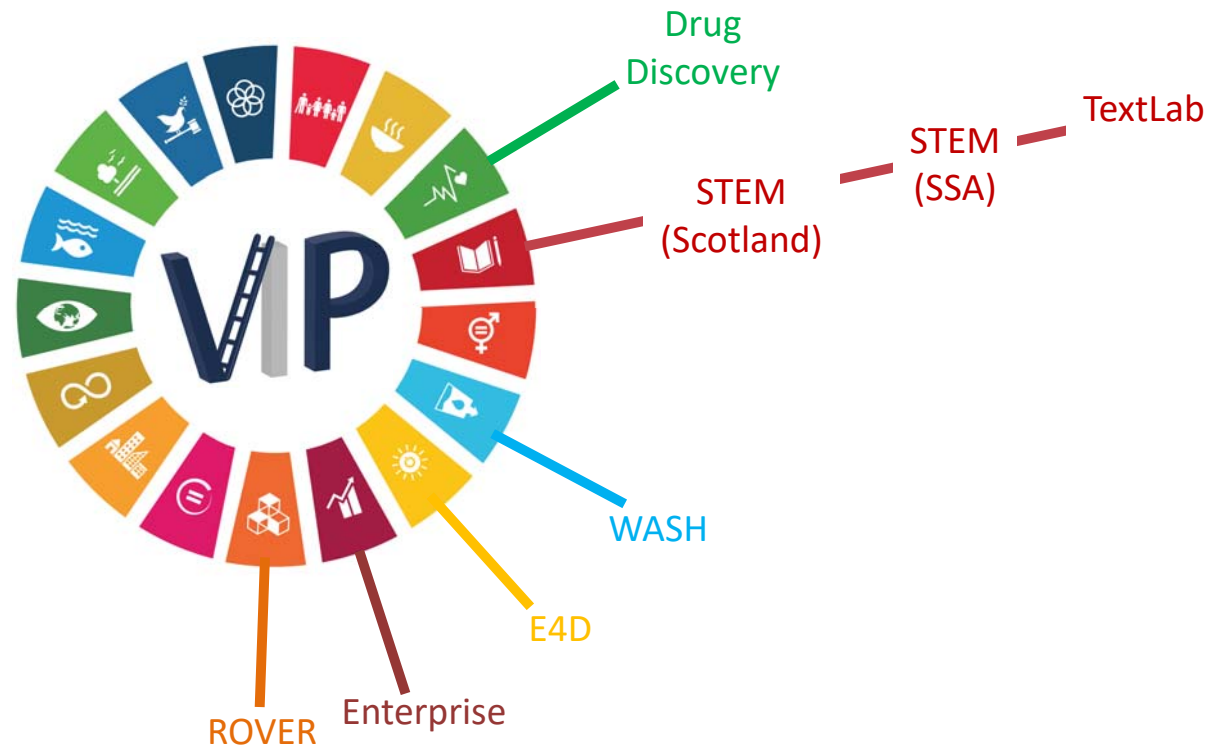
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150 - 200 students
8 VIP4SD projects



VIP4SD at Strathclyde... projects in pipeline

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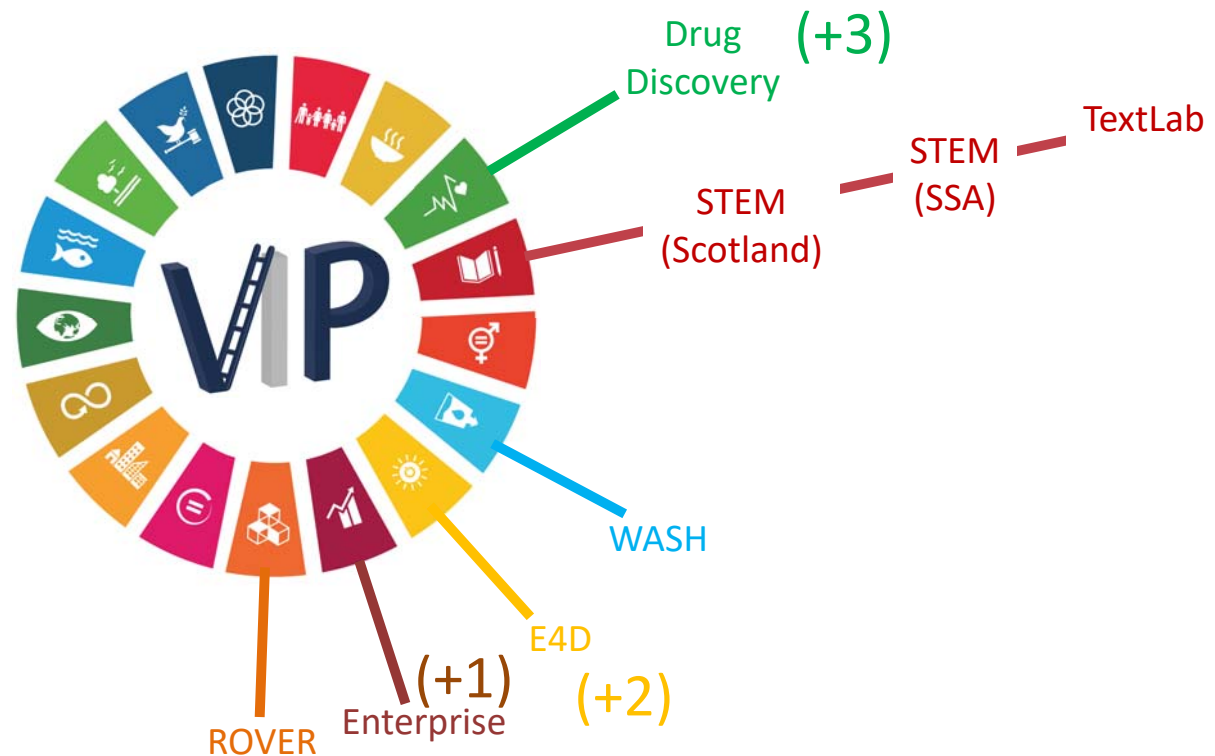
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150 - 200 students

8 VIP4SD projects



Outreach for delivering impact...

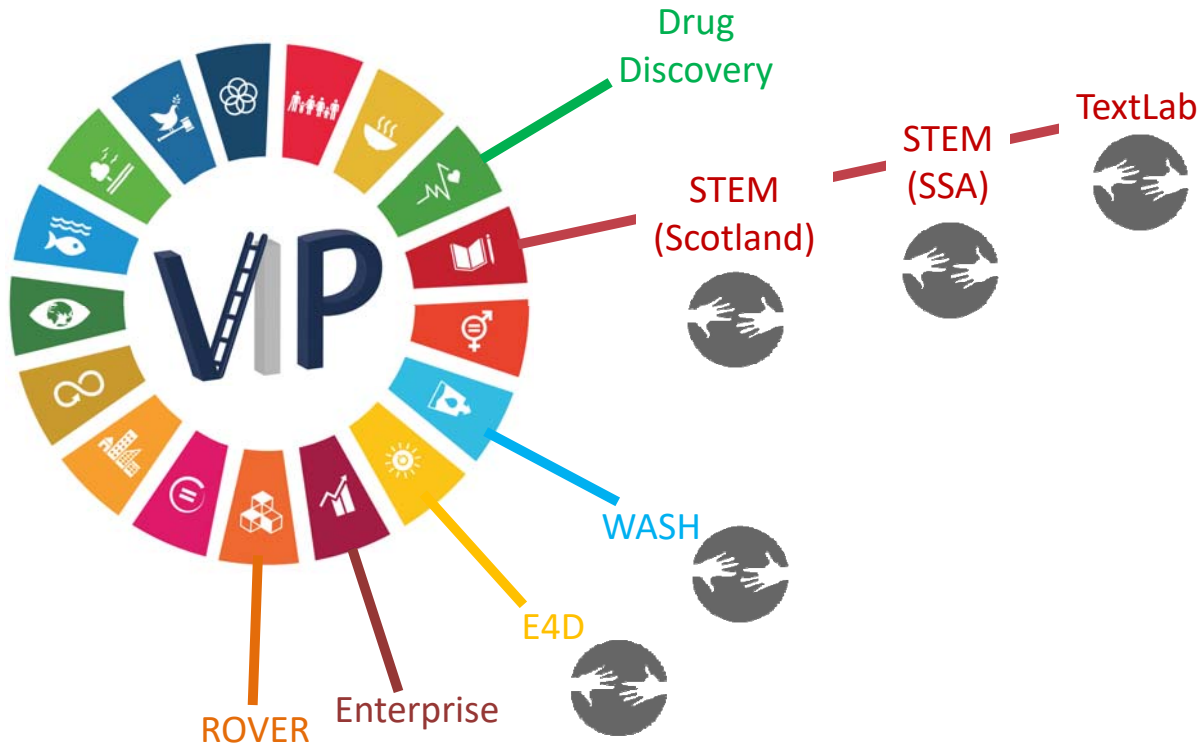
Living labs for field testing, data gathering, etc.

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150 - 200 students



SUSTAINABLE DEVELOPMENT GOAL 7

Ensure access to affordable, reliable, sustainable and modern energy for all



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14 students



Energy for Development **E4D**



SUSTAINABLE DEVELOPMENT GOAL 7

Ensure access to affordable, reliable, sustainable and modern energy for all



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“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 DEVELOPMENT GOAL 7

Ensure access to affordable, reliable, sustainable and modern energy for all



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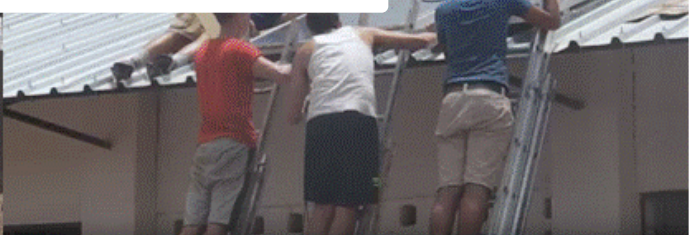


Global problem in need of effective and innovative engineering solutions...



2017





The Gambia Project

Vertically Integrated Projects

While the Gambia Project has been responsible for 8 solar PV projects over the last decade, in 2012 the project started connecting students to work on real world problems through the Vertically Integrated Projects programme, or VIP.

VIP has linked several different academic disciplines together as a team: Electrical Engineering, Computer Science,

Design Manufacturing Engineering, and Business and Economics.

The VIP programme provides an opportunity for students to work over two academic years on a single project. By the second year they are mentoring the younger students and innovating technological solutions for places like the Gambia.



Bold, Ambitious, Innovative and Collaborative

HEADMASTERS OFFICE



SUSTAINABLE DEVELOPMENT GOAL 7

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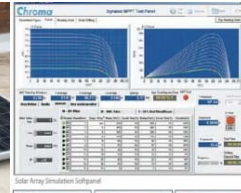
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2017

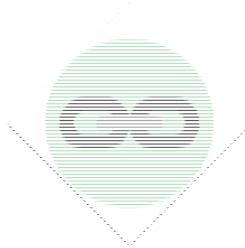


2019



Sustainable Energy for Development VIP

E4D



Student Experience



Research

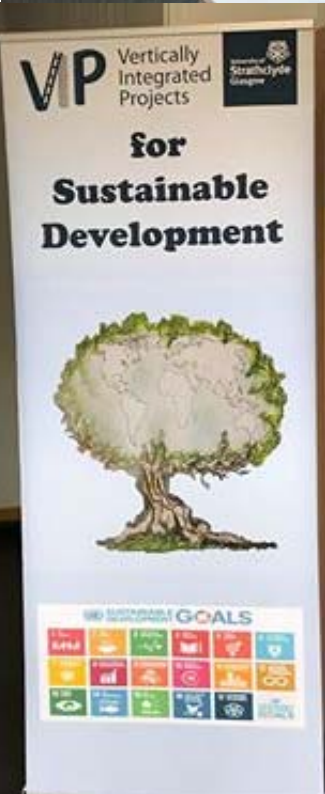


Impact





for Sustainable Development Conference 2019



Our Vision

Institutionalise & Internationalise

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eauc
The Alliance for Universities
Leadership in Excellence



Our Vision

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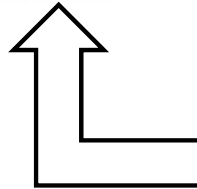


CESAER

conference of european schools
for advanced engineering education
and research



CHALMERS
UNIVERSITY OF TECHNOLOGY

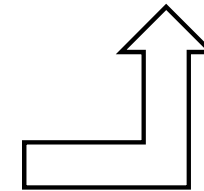


VIP
Global
Consortium
↑
Strathclyde
VIP
for
Sustainable
Development



**REGIONAL CENTRE OF EXPERTISE
ON EDUCATION FOR
SUSTAINABLE DEVELOPMENT**

ACKNOWLEDGED BY



**UNITED NATIONS
UNIVERSITY**

**Learning for
Sustainability
SCOTLAND**
Ag Ionnsachadh airson
Seasmhachd ALBA



17 PARTNERSHIPS FOR THE GOALS



for

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**SUSTAINABLE
DEVELOPMENT** **GOALS**

scott.strachan@strath.ac.uk



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Discussion/Questions

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Discussion points

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- What could you do with a VIP4SD team?
- What are the barriers you foresee in implementation
- Who would you need to convince to make things happen?
- Are there already similar initiatives at your institution? What are they?
Could they become VIP?
- Are you interested in follow up communications about starting a VIP team/programme?

The SDG Accord

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End extreme poverty, inequality and climate change
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