

USING PROJECT-BASED ONLINE LEARNING FOR SUSTAINABILITY EDUCATION

Scene Setting - Context

5 Polytechnics
~ 70,000 students
>35 Diplomas each
Continuing Education

Practice-based Learning
Applied Learning, Projects,
Internships

Singapore's
Economic &
Technological
Developments

Sectorial Industry-based
Curriculum

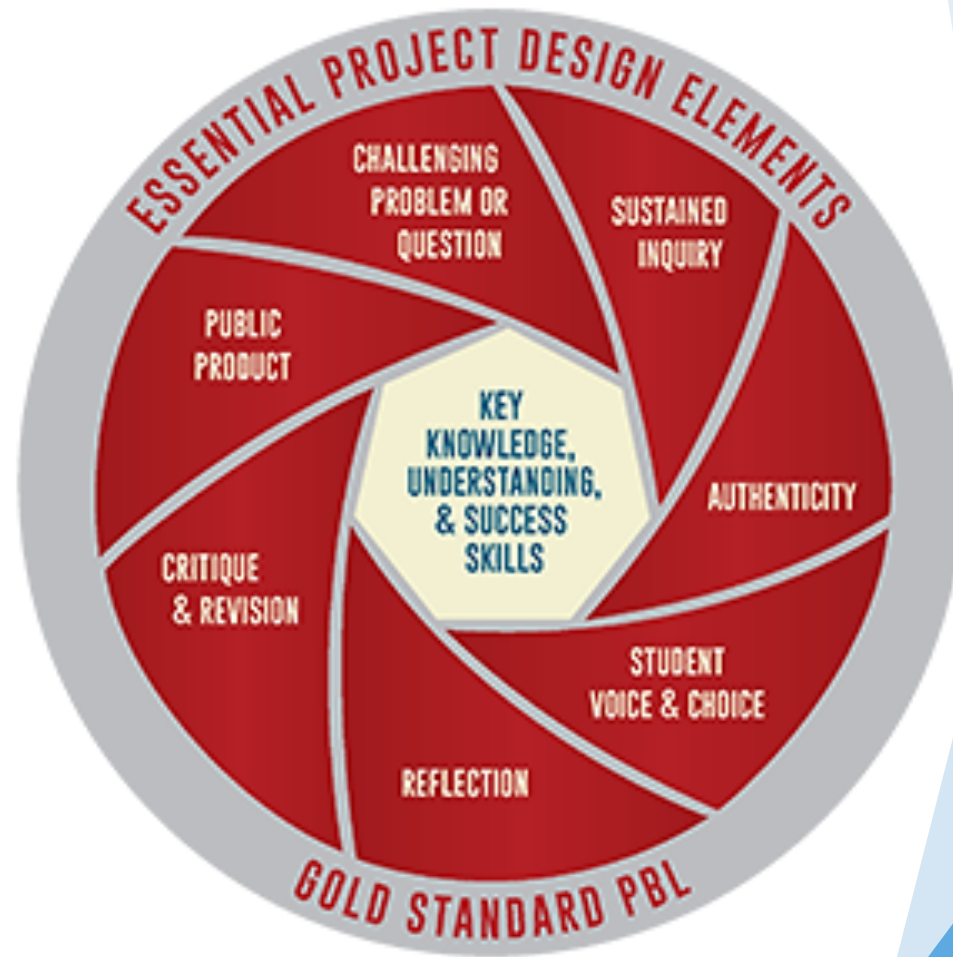
Scene Setting - Definitions

Buck Institute of Education

Project-based learning

is a teaching method, in which students gain knowledge and skills by working for an extended period of time to investigate and respond to a complex question, problem, or challenge.

<http://bie.org/resources>



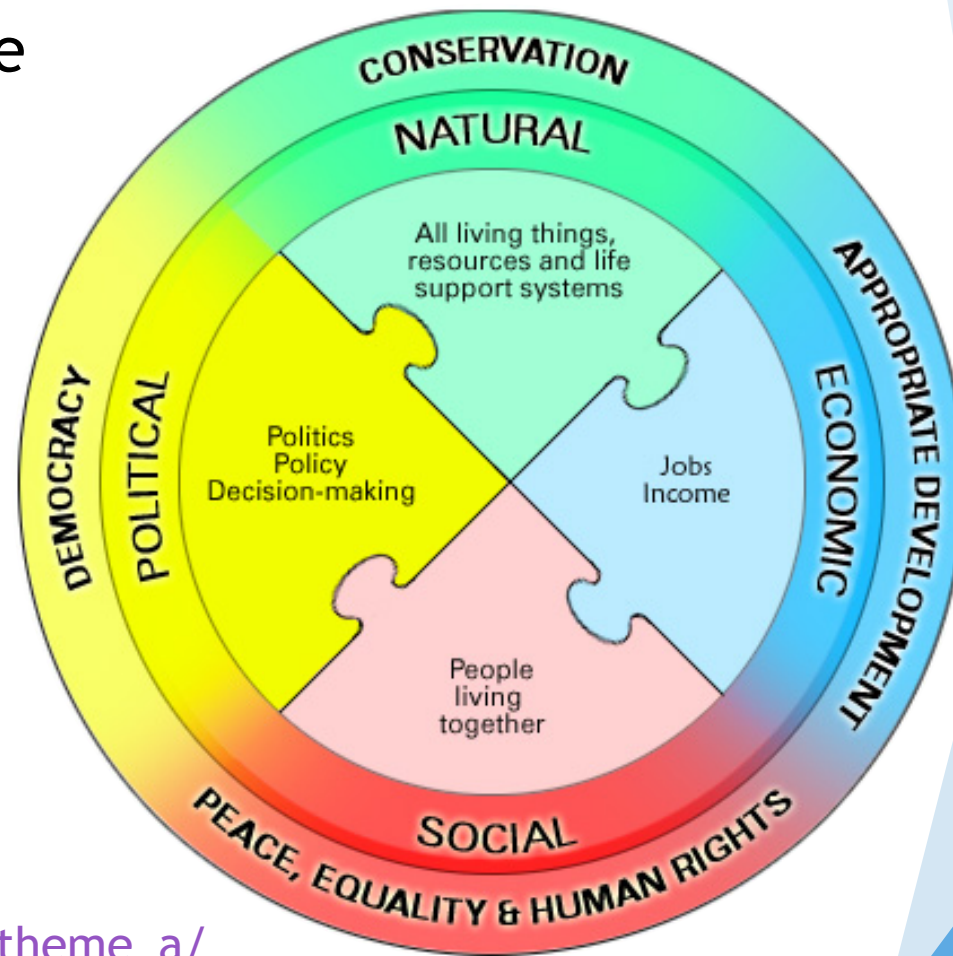
Scene Setting - Definitions

Decade of Education for Sustainable Development (2005 to 2014) - lead agency, UNESCO

Higher Education Sustainability Initiative (HESI) was created through a partnership of UN entities - UNESCO, UN-DESA, UNEP, Global Compact, and UNU

Multiple Definitions due to Different Dimensions

http://www.unesco.org/education/tlsf/mods/theme_a/interact/mod02task04/mod02task04.htm



Definition	Dimensions			
	Social	Economic	Ecological	Political
<p>Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.</p> <p>Source: World Commission on Environment and Development (1987) <i>Our Common Future</i>, Oxford University Press, Oxford.</p>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>
<p>A primary goal of sustainable development is to achieve a reasonable (however defined) level of fairly distributed economic well-being that can be maintained for many human generations.</p> <p>Source: Goodland, R. and Ledoc, G. (1987) Neoclassical economics and principles of sustainable development, <i>Ecological Modelling</i>, Vol. 38.</p>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>
<p>Sustainable development means the will to follow a rational approach to economic policies; to show respect for future generations by integrating concern for environmental protection into decision-making; and progressively to evolve towards the full participation of all concerned actors.</p> <p>Source: Barboza, N. (2000) Educating for a sustainable future: Africa in action, <i>Prospects</i>, 30(1), pp. 71-85.</p>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>
<p>The simplest definition of a sustainable activity is that it can be continued for the foreseeable future. And this has at least three dimensions: it means not unreasonably depleting natural resources, not producing waste products that significantly alter natural systems, and not undermining social stability.</p> <p>Source: Lowe, I. (1990) 'Sustainable development: How do we get there?' <i>Australian Society</i>, June, No. 5.</p>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>
<p>Sustainable development means:</p> <ol style="list-style-type: none"> 1. ensuring self-sustaining improvements in productivity and quality of life of communities and societies; 2. ensuring that production processes do not overexploit the natural resource base and compromise the quality of the environment, thus limiting the options of the poor, the present and future generations; and 3. ensuring that people have basic human rights and freedoms to participate societies. <p>Source: Singh, N. and Titi, V. (1995) <i>Empowerment: Towards Sustainable Development</i>, Zed Books, London, p. 8.</p>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/>

Side-track - Resource



The banner features a dark background with a large blue circular logo on the left containing a collage of images related to education and sustainability. To the right of the logo, the title 'TEACHING AND LEARNING FOR A SUSTAINABLE FUTURE' is written in large, bold, blue capital letters. Below the title, the subtitle 'a multimedia teacher education programme' is written in smaller white text. At the bottom of the banner, there are five navigation links in white: 'About TLSF', 'Curriculum Rationale', 'Across the Curriculum', 'Contemporary Issues', and 'Teaching & Learning Strategies'.

TEACHING AND LEARNING FOR A SUSTAINABLE FUTURE
a multimedia teacher education programme

About TLSF Curriculum Rationale Across the Curriculum Contemporary Issues Teaching & Learning Strategies

Teaching and Learning for a Sustainable Future is a UNESCO programme for the United Nations Decade of Education for Sustainable Development. It provides professional development for student teachers, teachers, curriculum developers, education policy makers, and authors of educational materials. The modules are divided into 4 themes. [More ...](#)

THEME 1

CURRICULUM RATIONALE

These modules present an introduction to the global realities, imperatives for sustainable development and educational issues that form the rationale of Education for a Sustainable Future.

1. [Exploring global realities](#)
2. [Understanding sustainable development](#)
3. [A futures perspective in the curriculum](#)
4. [Reorienting education for a sustainable future](#)
5. [Accepting the challenge](#)

THEME 2

SUSTAINABLE DEVELOPMENT ACROSS THE CURRICULUM

These modules illustrate ways in which Education for Sustainable Development can be integrated into all areas of the curriculum, especially into cross curriculum themes such as health and consumer education.

6. [Sustainable futures across the curriculum](#)
7. [Citizenship education](#)
8. [Health education](#)
9. [Consumer education](#)

<http://www.unesco.org/education/tlsf/>

RATIONALE

Education for Sustainability requires:

- Multi-disciplinary approach
- Participatory learning
- High orders of thinking

Project-based Learning requires:

- Challenging question
- Sustained inquiry
- Critique & Revision, Reflection



Can technology use lead to more socially aware and responsible learners?



If Project-based Learning goes Online, can it extend learning about sustainability?

Research Questions

Can project-based online learning be utilised to help learners gain the tenets espoused by an education for sustainability vis-à-vis the frequently used case study approach?

Can the project-based learning approach, which is by nature, collaborative and experiential, result in social capital that successfully transforms into learning about social equity?

Study Design

61 Year 2 Business Students taking the Corporate Social Responsibility (CSR) Elective or involved in CSR activities

31 Students

- 15 Face-to-face Tutorials
- Elearning
- Case studies
- End-of-Course Project (6 groups)

30 students (6 groups)

- 8 Face-to-face Tutorials
- 7 Online Consultations
- Project-based Online Learning
- End-of-Course Project

Pre-survey (April), Mid-point survey (June), Post-survey (August)

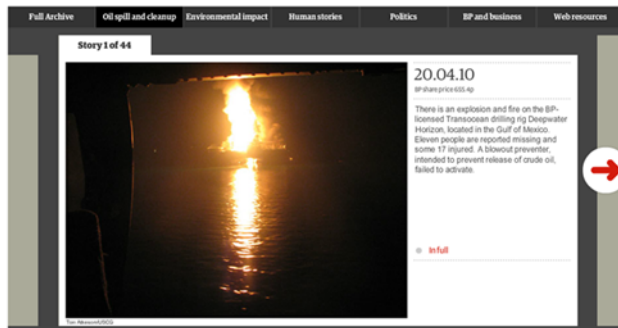
Sustainability
Knowledge

Sustainability
Actions

Learning
Experience

Case Studies

BMS232 Case Study



<http://www.theguardian.com/environment/bp-oil-spill>
<http://www.theguardian.com/environment/interactive/2010/jul/08/bp-oil-spill-timeline-interactive>

In the BP Oil Spill, more than 200 million gallons of crude oil was pumped into the Gulf of Mexico for a total of 87 days, making it the biggest oil spill in U.S. history. 16,000 total miles of coastline have been affected, including the coasts of Texas, Louisiana, Mississippi, Alabama, and Florida. Even though the gushing well was capped in July 2010, oil is still washing up on shores, which might cause long-term damages to people living in the area. The initial oil rig explosion killed 11 people and injured 17 others.

Discuss what are BP's responsibilities?

BMS232 Case Study

Bangladesh

Bangladesh factory fires: fashion industry's latest crisis

With factory blazes happening every week, activists say fire is as serious a risk as poor construction but goes largely unreported

Jason Burke in Dhaka

Sunday 8 December 2013 13:58 GMT

376 Shares 25 Comments



In the wake of the horrific clothing factory building collapse which killed as many as 800 workers near Dhaka, Bangladesh, international brand name retailers whose apparel products may have been produced there are under mounting pressure both to contribute to a compensation fund and to provide financial support for improving safety at some of the country's 4,000 garment factories.

Discuss:

- Who should take responsible?
- Who should pay?
- How do you compensate victims?

BMS232 Case Study

>> ASIAONE / SPECIALS / Can you live with FOREIGN WORKERS?



Serangoon Gardens residents were unhappy that a vacant plot of land may be used as a dorm.

They cite congestion, crime and loss of property value. More than 500 residents signed the petition.

You are the MP for the area. What will you do?

PBOL

Table of Contents

- Team Project Brief
- Not Business as Usual
- CSR Quiz 1
- CSR Quiz
- Sustainability Survey 1
- Select a CSR company
- CSR Assessment
- CSR Plan - Initial Idea
- CSR Proposal Review
- CSR Quiz 2
- Course Feedback Survey
- Sustainability Survey 2
- Final Proposal
- CSR Assessment
- CSR Project Plan - Initial Idea
- CSR Proposal - 1st draft

CSR Project

Build Content

Assessments

Tools

Partner Content

Discover Content

Team Project Brief

Not Business as Usual

Please watch this highly rated documentary video. It

CSR Quiz 1

Availability: Item is not available.
Enabled: Review
How much do you know about sustainability? Sustain
understand more about this. So, give it a go and find

CSR Quiz

CSR Assessment

Attached Files: [CSR_Assessment_Checklist_Eng.pdf](#) (1.887 MB)
Once your group has chosen a company, complete a CSR assessment of their current activities using the attached checklist. Once you have completed the audit, submit it online.

CSR Assessment

Enabled: Adaptive Release

CSR Plan - Initial Idea

Attached Files: [CSR Proposal Template.docx](#) (60.918 KB)
Based on the assessment you have completed, discuss and propose an initial idea for a CSR programme. The CSR programme should align with the company's goals and their portfolio of products and services. A proposal template is attached. Once you have completed this, submit this online.

CSR Project Plan - Initial Idea

Enabled: Adaptive Release

CSR Proposal Review

Please book at least three CSR consultations lasting 15 mins each with me over the next three weeks to review your CSR proposal

Use of Achievement Badges

PBOL Digital Tools

- Blackboard
 - Blogs
 - Journals
 - Assignments
 - Surveys & Tests
 - Achievement Badges
- Google Docs, Slides
- Microsoft Word Online, PowerPoint Online
- Abode Connect
- Google Hangout

Interim Findings

Pre-survey

MCQ

26 Questions

NS - Not Sure

No Googling allowed

Sustainability Knowledge

Category	Topic	Qxn Count (1 mark)	CS (n= 31)		PBOL (n=30)	
			Mean		Mean	
			Score	NS	Score	NS
Founding Principles	Basic Definitions	2	0.78	7	0.66	9
	Basic Concepts	2	0.76	3	0.67	8
Environment	Biodiversity	2	0.61	8	0.54	11
	Climate	2	1.42	0	1.32	2
	Pollution	2	1.14	3	1.01	4
	Resource	2	1.24	2	1.09	6
Social	Rights	2	0.99	9	0.81	9
	Healthcare	2	1.37	6	1.21	7
	Community	2	1.66	0	1.53	1
	Poverty	2	1.24	0	1.21	1
Economy	Growth	2	1.23	0	1.24	1
	Green Economy	2	0.55	16	0.65	17
	Corruption	2	0.71	4	0.78	2

Interim Findings

Pre-survey

Last Month

Yes/No

If yes, estimate how many times

Sustainability Actions

Actions	CS (n= 31)		PBOL (n=30)	
	Count %	Mean Freq.	Count %	Mean Freq.
Recycled	45%	6	53%	7
Refused Plastic (Bags and Bottles)	90%	16	93%	12
Meatless, Vegetarian Meals	6%	90	3%	90
Took Cold Showers	16%	37	20%	45
Set AC to 25 °C	16%	34	17%	37
Spoke up to defend someone	48%	5	33%	7
Lied (proxy for antisocial behaviour)	77%	12	67%	9
Volunteered or Donated	32%	3	23%	6
Takeaways (proxy for wastefulness)	90%	12	83%	21

Interim Findings

Mid-point Survey

MCQ

26 Questions

Different, Deeper Questions

NS - Not Sure

Sustainability Knowledge							
Category	Topic	CS (n= 31)			PBOL (n=30)		
		Mean		Delta	Mean		Delta
		Score	NS		Score	NS	
Founding Principles	Basic Definitions	1.33	0	28%	1.24	0	29%
	Basic Concepts	1.46	0	35%	1.33	0	33%
Environment	Biodiversity	1.11	5	25%	1.05	4	26%
	Climate	1.51	0	5%	1.6	2	14%
	Pollution	1.19	3	3%	1.24	1	12%
	Resource	1.31	4	4%	1.41	0	16%
Social	Rights	1.11	4	6%	1.11	3	15%
	Healthcare	1.41	0	2%	1.33	0	6%
	Community	1.65	1	-1%	1.66	0	6%
	Poverty	1.26	1	1%	1.34	1	7%
Economy	Growth	1.33	2	5%	1.41	1	9%
	Green Economy	1	4	23%	1.18	2	27%
	Corruption	1.25	3	27%	1.19	2	21%

Interim Findings

Mid-point Survey

Last Month

Yes/No

If yes, estimate how many times

Sustainability Actions

Actions	CS (n= 31)			PBOL (n=30)		
	Count %	Mean Freq.	Delta	Count %	Mean Freq.	Delta
Recycled	53%	7	8%	55%	13	2%
Refused Plastic (Bags and Bottles)	93%	21	3%	94%	14	1%
Meatless, Vegetarian Meals	13%	74	7%	23%	67	20%
Took Cold Showers	21%	23	5%	32%	33	12%
Set AC to 25 °C	22%	37	6%	61%	37	44%
Spoke up to defend someone	51%	11	3%	45%	7	12%
Lied (proxy for antisocial behaviour)	64%	6	-13%	58%	9	-9%
Volunteered or Donated	34%	2	2%	29%	6	6%
Takeaways (proxy for wastefulness)	75%	8	-15%	39%	21	-44%

Interim Findings

Mid-point Survey

Likert Scale
(1 - disagree > 6 - Agree)

Learning Experience

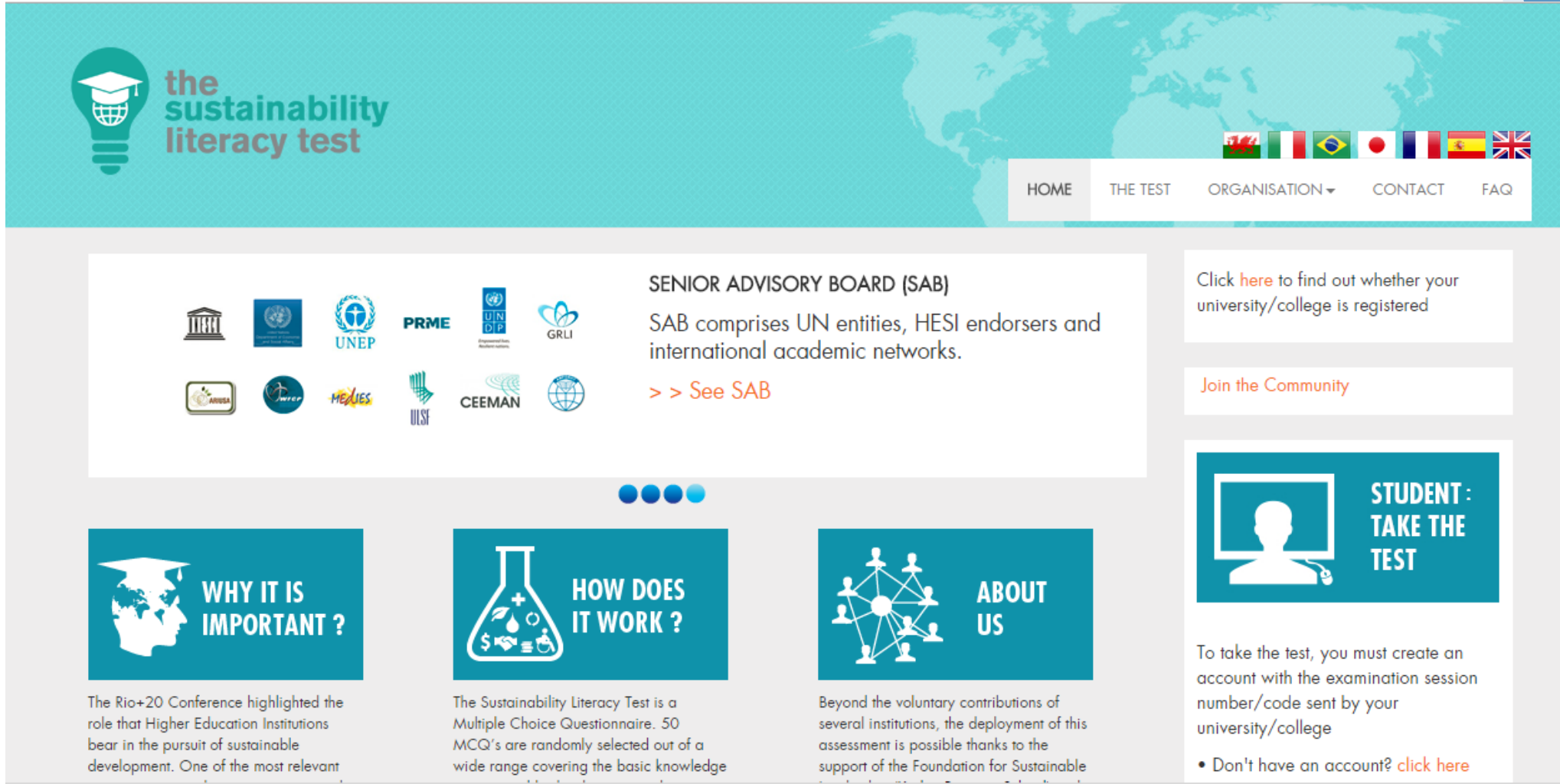
Category	Topic	CS (n= 31)	PBOL (n=30)
		Mean	Mean
Knowledge Gain	My knowledge about sustainability has increased.	5.12	5.12
	The learning activities helped me learn topics quicker.	4.61	4.45
	I have a deeper understanding about sustainability.	3.78	4.42
Collaborative Outcomes	My group had numerous discussions about our project.	3.98	4.61
	My group challenged each other to do more.	4.51	4.64
	My group discussions helped me understand more.	4.36	5.33
	My group produced work I am proud of.	3.36	4.87
Critique	I learned how to speak up and be heard.	3.78	4.12
	I respected ideas and contributions from others.	4.33	4.59
	I gave constructive feedback.	3.82	4.33
Reflective Practice	The learning activities made me more conscious about my actions.	4.33	4.67
	I am more involved in contributing to the community and the environment	3.81	4.29
	I know what my values are and I act on them.	4.76	5.01

Post-Survey The Sustainability Test

To be conducted in August

PENDING

Sustainability Literacy Test



The screenshot shows the homepage of the Sustainability Literacy Test website. The header features a teal background with a world map and the logo 'the sustainability literacy test' which includes a lightbulb icon. A navigation bar contains links for HOME, THE TEST, ORGANISATION, CONTACT, and FAQ. Below the header, there is a section for the SENIOR ADVISORY BOARD (SAB) listing various international organizations like UNEP, PRME, and GRI. To the right, a box prompts users to click a link to check if their university is registered, and another box says 'Join the Community'. The main content area has three columns: 'WHY IT IS IMPORTANT?' with a graduation cap icon, 'HOW DOES IT WORK?' with a flask icon, and 'ABOUT US' with a network icon. Each column has a brief description. On the right side, a 'STUDENT: TAKE THE TEST' section includes an icon of a person at a computer and instructions on how to take the test, including a link for users without an account.

the sustainability literacy test

HOME THE TEST ORGANISATION CONTACT FAQ

SENIOR ADVISORY BOARD (SAB)
SAB comprises UN entities, HESI endorsers and international academic networks.
>> See SAB

Click [here](#) to find out whether your university/college is registered

Join the Community

STUDENT: TAKE THE TEST

To take the test, you must create an account with the examination session number/code sent by your university/college

- Don't have an account? [click here](#)

WHY IT IS IMPORTANT ?
The Rio+20 Conference highlighted the role that Higher Education Institutions bear in the pursuit of sustainable development. One of the most relevant

HOW DOES IT WORK ?
The Sustainability Literacy Test is a Multiple Choice Questionnaire. 50 MCQ's are randomly selected out of a wide range covering the basic knowledge

ABOUT US
Beyond the voluntary contributions of several institutions, the deployment of this assessment is possible thanks to the support of the Foundation for Sustainable

<http://www.sulite.org/>

Interim Analysis

- PBOL is just as effective
- PBOL is more engaging
- PBOL encourages prosocial action

- PBOL was preferred by academically weaker students
- PBOL may be less preferred by academically stronger students
- PBOL helped academically weaker students do better
- Suggests that PBOL could be a equaliser