

Developing Career and Talent on Sustainability via Sustainability Learning Program (Project Pitching and Mentorship)

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1. Introduction

Sustainability Learning Program (SustLeaP) is a program specially designed in the attempt of achieving Program Objective (PO) in Environmental and Sustainability for engineering programs in Malaysia. The need to deliver sustainability learning agenda is crucial in all engineering programs because sustainability solutions, on top of engineering solutions, is related to the role of the engineering community in promoting sustainable development. The Sustainability Learning Program is a collaborative attempt between Universiti Malaysia Pahang (UMP) and Sustainable Business Network Association Malaysia (SustNET) to transform the approaches of teaching sustainability from an 'ad-hoc' and 'academic' discipline-based' to a systematic integration of sustainability into the engineering curriculum. This is greatly aligned with Malaysia initiatives towards Agenda 2030 as outlined in National SDG Road-map to guide implementation of Agenda 2030 and the Sustainable Development Goals (SDGs) in the country. This integration approach also crafting a new career path for the graduating students from engineering programs. This new career path called 'sustainability career (SC)' is trending in the world today to meet the demand of sustainability professionals in businesses and industries. In the world of professionals, sustainability professionals are expected to make profits by solving problems in the context of societal benefits which requires the personnel to apply knowledge from trans-disciplinary disciplines and not just engineering knowledge. Sustainability professionals will also run businesses not only for monetary gains but also balance the business impact to the society and the environment because he will ensure the 5P (Profit, People, Planet, Product & Process) are built-in into the business case right from the project kicks-off.

For the pilot run, UMP students taking the subject 'Environmental Safety & Health (ESH)' from Faculty of Manufacturing Engineering, Universiti Malaysia Pahang is the chosen platform to demonstrate the program. Students are assigned with a task to design solutions based on the 5P principles (Profit, People, Planet, Product, and Process) and incorporate the indicators of Sustainable Development Goals (SDGs) as the deliverable of the project. Ideas from all disciplines of knowledge are celebrated as part of the effort to inculcate trans disciplinary elements in the solution-based thinking which is crucial for solving complex problems in the 21st century.

This program also takes up the challenge in Malaysia for being an active participant in 2017 The High-level Political Forum, United Nations which is the central platform for follow-up and review of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals. Engineering students learn about resource mobilizing concepts and funding through partnerships i.e crowdsourcing, social entrepreneurship, CSR programmes and funding from local and international sources during pitching sessions with the panels who are members of NPO and industry players. For the pilot run, panels are specially selected from Sustainable Business Network Association Malaysia (SustNET) who are certified with Green Project Managers (GPM-b) and industry players from telecommunication and oil & gas.

The SustLeaP program also introduces engineering students to the highly sought-after concept in a career path in the era of sustainability which is sustainability career (SC). This concept is aligned with the systemic thinking required by many employers as sustainability in businesses is essential in achieving sustainable competitive advantage in the world today. The integration of knowledge on sustainability principles and entrepreneurial skills towards building a sustainability career path is the extra special element in the SustLeaP program. The idea for students to be the 'seeds' of the 'change-agent' community is realized in this program as the learning experience provide a basic foundation on sustainability knowledge and awareness during their campus life under the mode of experiential learning. Prior to the program, students are given knowledge on the concept and solutions of sustainability as part of the learning outcome in the ESH course. The knowledge of ESH at the workplace is applied with sustainability principles in the context of the application and delivered in the form of project deliverables in the dimension of entrepreneurship. It is interesting to note that the program is coordinated with the shared value contributed by the professionals in green project management i.e certified Green Project Manager (GPM-b) and has prior working experiences in large firms and government sectors. This 'shared value' enriches the learning experiences of the students as the real-life experience is able to be 'realized' into the class during the program sessions thus increasing the impact of the sustainability teachings in the program. The students' experience in SustLeaP program is potential to be recognized as a working experience towards 'job-creation' mode of employability rather than only depending on being an employed graduate only. This may change the recruitment landscape of engineering students from relying totally upon being a job hunter with the bachelor degree to being hunted by the future employers for their sustainability skills and entrepreneurship as Sustainability Graduates (SG). In summary, SustLeaP attributes are aligned with aspirations of Malaysia Higher Education Blueprint (Higher Education) as shown in Figure 1 and 2 below.

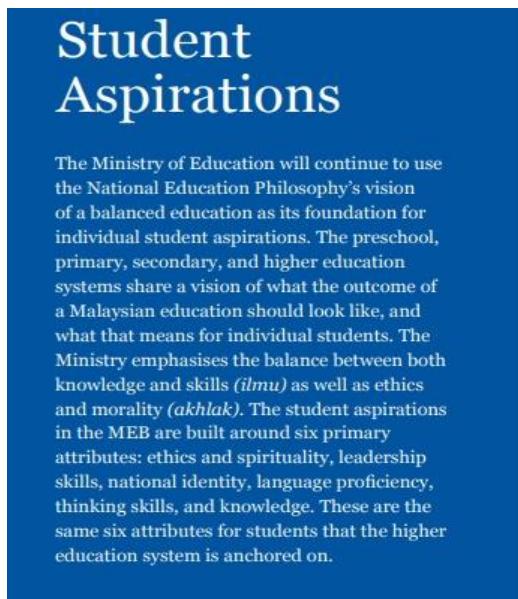


Figure 1. Student aspirations in HE based on Malaysia Education - Blueprint Higher Education (MEB-HE) 2015-2025

SustLeaP attributes	Collaborator Partner	/	Employability Traits	MEB (HE) aspirations
Engineering solutions	University		Engineering Knowledge	Focus on outcomes over inputs and to actively pursue technologies and innovations that address students' needs and enable greater personalisation of the learning experience;
Green Project Management	GPM Global - SustNet strategic partnership		Project Management skills	Construct a system that is less focused on traditional, academic pathways and that places an equal value on much-needed technical and vocational training;
			Sustainability competency	
Entrepreneurship	SUSTNet		Entrepreneurship Skills	Instill an entrepreneurial mindset throughout Malaysia's higher education system and create a system that produces graduates with a drive to create jobs, rather than to only seek jobs;

Figure 2. Summary of SustLeap attributes with alignment to aspirations of Malaysia Education Blueprint Higher Education (MEB-HE) 2015-2025

SustLeaP attributes is based on the principle of value creation and value sharing for the benefit of society in the dimensions of university-industry collaboration based on integrative approach in response to global changes towards Agenda 2030 (Figure 3) . It is our notion that sustainable development is necessary at all phases of impact from the multifaceted interactions among knowledge, skills and competency within educational,

economic, environmental sociological paradigms in human society as woven by the network shown in Figure 3.

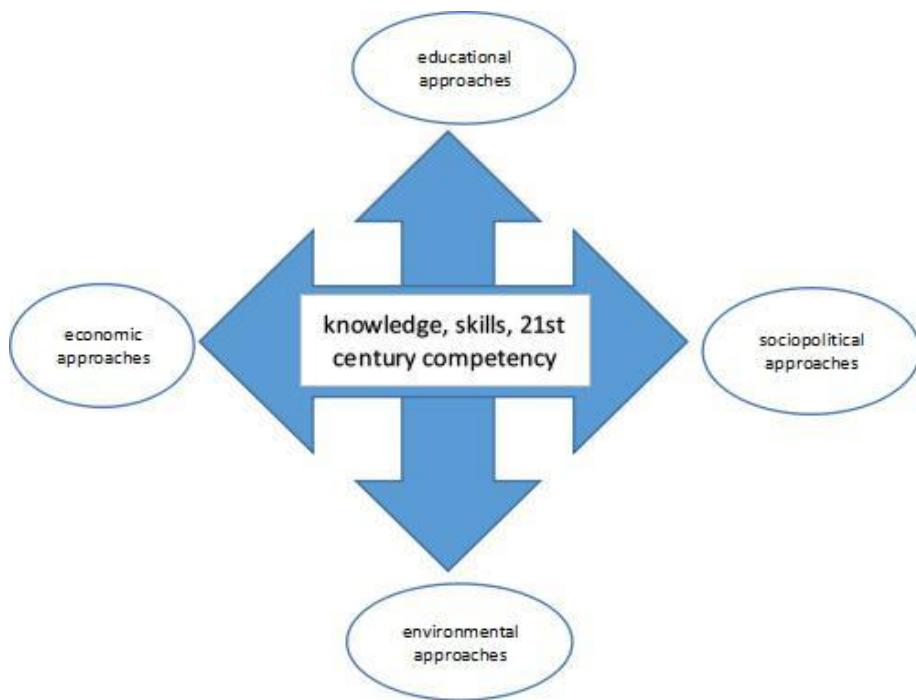


Figure 3. An integrated approach in response to global change

Another rewarding experience of the program is the opportunity of the students to move forward with their business ideas to the next stage of the program. There are two opportunities available as follows:

- GPM Award
- A World Of Three Zeroes Award
- Potential funding
- Talent pool for sustainability career

The students are free to move forward with the ideas based on the options that is feasible to them and subjected to availability.

2. Methodology

2.1 Participants:

The students involved in the pilot SustLeaP consists of students from three engineering programs in Faculty of Manufacturing Engineering as follows:

- Bachelor of Mechatronics Engineering
(Dual Degree Program with HsKA, Germany)
- Bachelor of Manufacturing Engineering
- Bachelor of Mechatronics Engineering

The 95 participants in this pilot run are enrolled students in a faculty course i.e Environment Safety & Health and SustLeap is the program chosen in the project assessment mode. The students form 17 teams to participate in the SustLeaP program to complete the course objective which is expected to deliver the outcome for 'Environmental and Sustainability' i.e one of the Program Outcome (PO) designated by the Board of Engineers Malaysia (BEM) for engineering accreditation program requirement.

2.2 Design and Procedures

The class is structured into two phases. Part one consists of lesson outcomes based on knowledge on ESH and its application in industry with sustainability principles as general guidelines in providing solutions of which assignments and test was delivered. Part two is the project mode which is structured in Table 1. Briefing on the concepts of shared value, social entrepreneurship and sustainability principles towards Agenda 2030 is included in a special briefing from SustNET in week 10 (Figure 4).

Table 1. ESH Course structure

Phases	Assessment Mode	Program Objective	Deliverable
Part 1	Assignments, Test	PO1. Knowledge	<ul style="list-style-type: none"> ● Assignments ● Test
Part 2	Project	PO3. Design and develop solutions PO7. Environmental and Sustainability	<ul style="list-style-type: none"> ● Project Minutes of Meeting ● Pitching for sustainable solutions assessment ● Presentation skill assessment ● Project Report

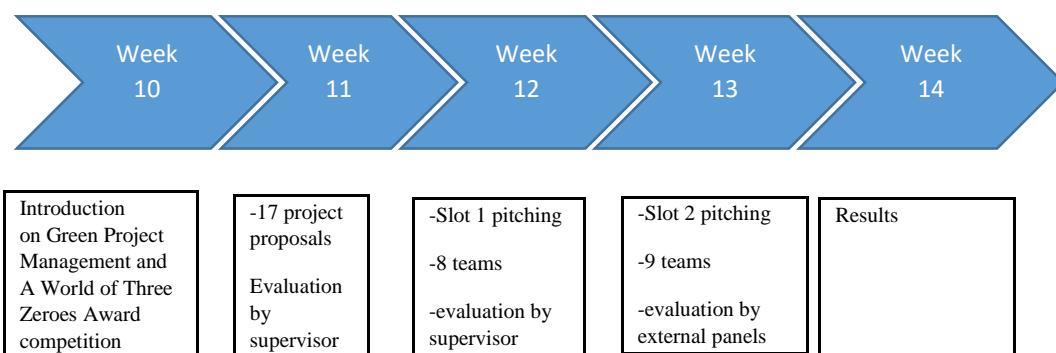


Figure 4 . The flow of Sustainability Learning Process (SustLeaP) process as a project mode in ESH course

2.2.1 Assessment

There are two different sets of rubric being used for the project assessment for the pitching sessions based on the different objectives as shown in Table 2. Results of the pitching sessions are shown in Table 3 and summarized in Figure 5 below.

Table 2. SustLeap pitching program structure

SustLeaP objectives	Rubric Type	Assessor	Assessor's credentials in sustainability learning
Academic	<ul style="list-style-type: none"> ● Presentation skills for engineers 	University Lecturer	GPM-b
Sustainability in project management	<ul style="list-style-type: none"> ● Business sustainability ● Social entrepreneurship 	SustNet	GPM-b

2.2.2 Pitching Results

Table 3. Summary of SustLeaP pitching results

Group	Number of participants	Pitching Score	Presentation score
G5	5	84.76%	81.54%
G13	5	76.19%	86.15%
G2	2	76.19%	95.38%
G7	6	73.33%	80.00%
G9	6	73.33%	80.00%
G15	6	72.38%	90.77%
G14	6	71.43%	80.00%
G17	7	70.48%	95.38%
G6	6	67.62%	95.38%
G12	5	65.71%	92.31%
G1	6	63.81%	84.62%
G11	6	61.90%	87.90%
G8	6	58.10%	78.46%
G4	5	58.10%	80.00%
G16	6	56.19%	90.77%
G3	6	53.33%	75.38%
G10	6	46.67%	80.00%

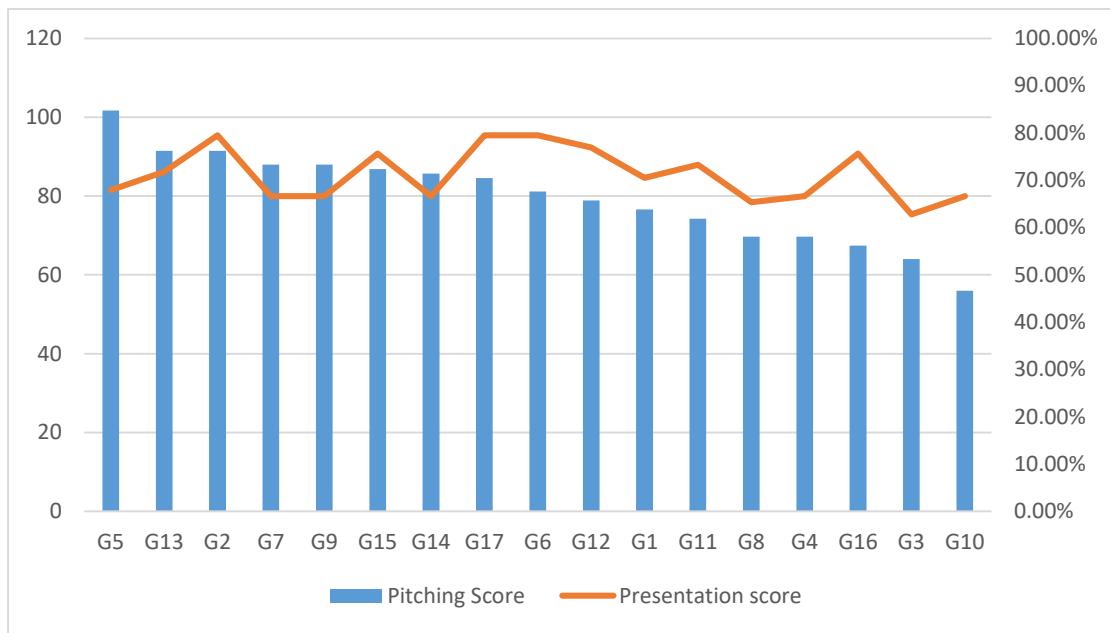


Figure 5. Overview of pitching and presentation skills results in Sustainability Learning Program (SustLeaP)

2.2.3 Student reflection in project report

All of the participants in this program were requested to write a short reflective essay as part of the project report to reflect their learning experiences in SustLEAP program. The observations are made based on fourteen themes shown in Table 4 below:

Table 4. Summary of mentions in students' reflection

No of themes	Most common themes by mention (From 95 reports)	Mention* : No of reports discussing the theme	Mention % : No of reports discussing the theme (% of reports)
1	Increase of awareness in Safety & Health issues in workplace	56	58.90%
2	Appreciating teamwork experiences and gain trust building	42	44.20%
3	A fun and good learning platform for effective project management and communication skills	47	49.50%
4	Knowledge on sustainability concept and SDGs	51	53.70%
5	Pitching experience with the industry players	40	42.10%

6	A feeling of being a working engineer	6	6.30%
7	Ability to exercise critical thinking and use holistic approach in realising project goals	3	3.20%
8	Amazement of self-potential in social business and entrepreneurship	10	10.50%
9	Confidence building and self-esteem boosting experience	12	12.60%
10	Realising own and maximise team's creativity to create jobs for the future	13	13.70%
11	Applying engineering knowledge to solve real world problems	8	8.40%
12	An opportunity for lifelong learning	13	13.70%
13	Applying the sustainability concept in engineering solutions	20	21.10%
14	Applying engineering knowledge in multi-disciplinary projects	3	3.20%

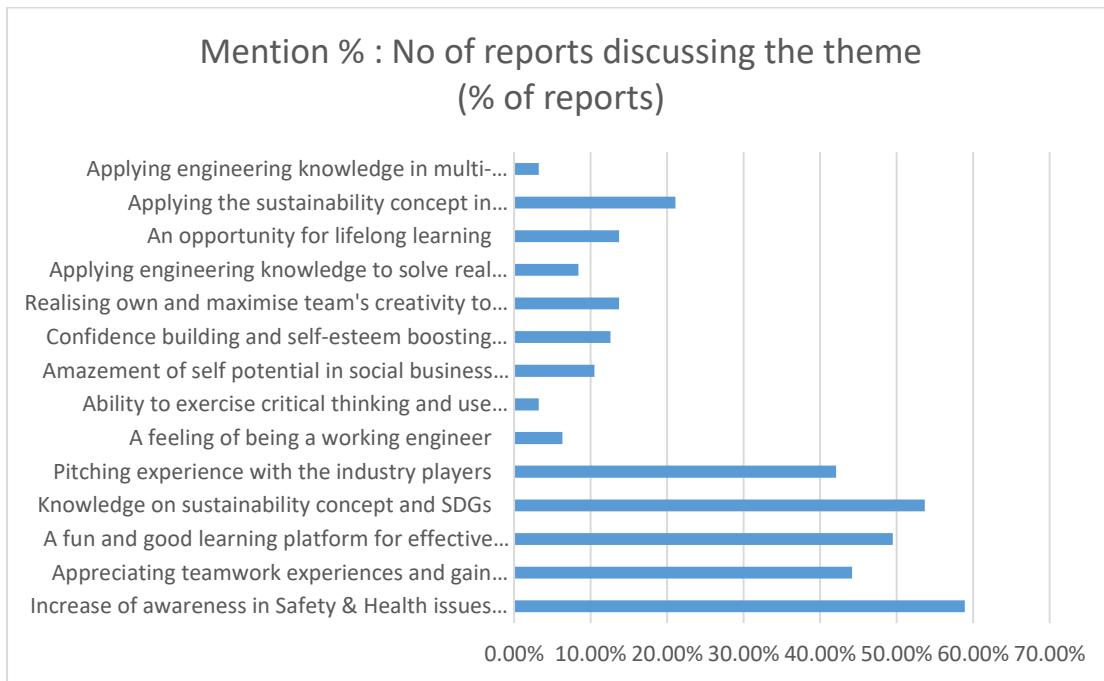


Figure 6. Overview of mentions observed from reflection section of the project report based on the themes

The fourteen theme are then mapped to the four elements of integrated approach (see Figure 3) in generating knowledge and skills of the 21st century to see the relations between the learning experiences gained by the students from their reflective observations in the project report to the aspirations of the SustLeap program. The results show a higher percentage in socio-political and economical approach followed by educational and environmental approaches (see Figure 7)

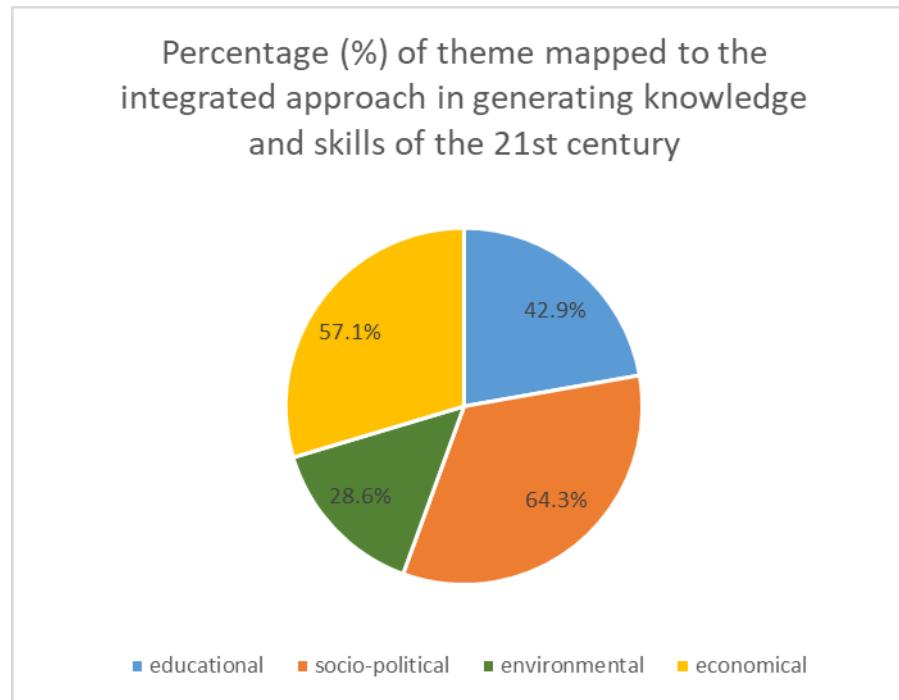


Figure 7. Overview of mentions observed from reflection section of the project report based on the themes

2.2.4 Potential mentees for SustLeap mentorship program

The students were asked whether they are interested in pursuing their project to another level beyond academic. Based on the survey which is thrown at the end of the program 68.4 % show great interest to join in the talent pool for sustainability professionals. The results suggest a positive result among the students in embracing the program mentorship mode and provide a professional path for them to pursue their career in entrepreneurship and to job creation pathway in employability.

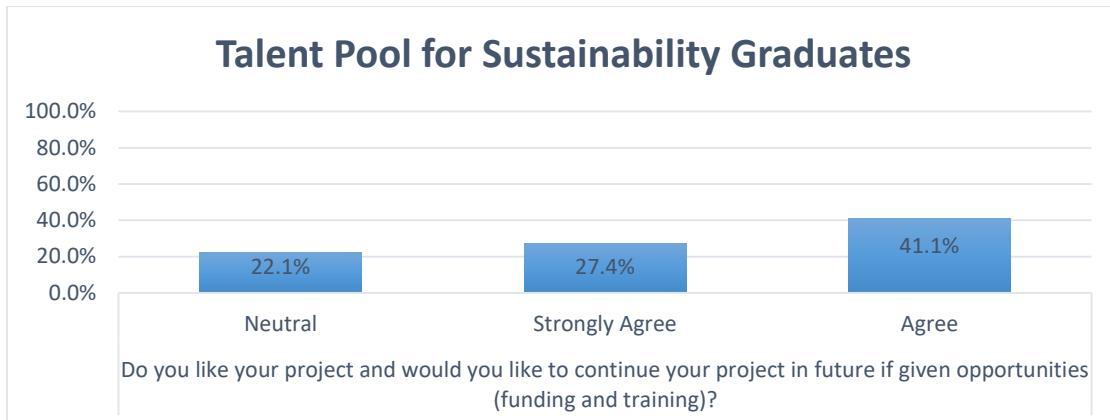


Figure 8. Overview of students' feedback on their interest in pitching project and its future undertakings

3. Conclusions

The sustainability learning program (SustLeap) has successfully bring the project pitching session and mentor-mentee relationship to fruition in terms of allowing students to express their understanding on sustainability via their 3 choices of sustainable development goals. The program has able to develop talent among students in terms of linking their projects close to their career path plus bridging their talent in incorporating 3 elements of sustainability (economy, social and environment) into their business model - whether under project financing, social enterprise, corporate social responsibility, community driven programs or business (B2G, B2B or B2C) ventures.

With this report, this program can be implemented and replicated by other many Faculty's staff and lecturers, Institutions and Universities. Such initiatives can broaden the implementation of sustainability learning to the education sector and the industry. All the talented students can now continue developing their projects regardless in which industry sector they prefer to be associated with. Their involvement with the community and projects can broaden the horizon of knowledge, business and scope of work for the stakeholders, government and public to embark in the same journey of sustainable development plus protecting the planet. Based on the pilot run, SustLeaP is able to demonstrate its function as enabler for graduating students to transform their creativity with knowledge obtained from the course to employability as sustainability professionals (Figure 6). Project pitching from students and assessment by industry experts can drive the project sustainability learning and evaluation into a smart partnership. The feedback by industry experts gives the bigger picture to the students regarding their project idea and the industry needs and gaps.

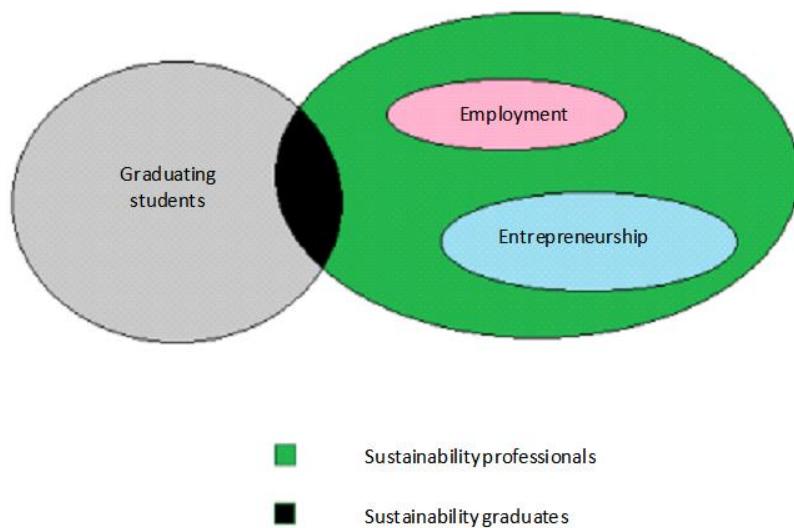


Figure 9 . Sustainability Learning Program (SustLeaP) as enabler for graduating students to have career path as sustainability professionals

The way forward for students to learn sustainability can now be engraved via this Sustainability Learning Program and SustNET can implement this program with any public and private institutions that wants their students to be involved in Sustainability Career and Project, thus providing systemic solution on Education for Sustainable Development (ESD) rather than symptomatic i.e ad-hoc or embedded mode in the education system in Higher Education (HE). Systemic thinking in creating value through SustLeaP is the sustainable approach to engineering solutions for the benefit of the world. Sustainability Learning Program that SustNET is implementing is embedding GPM Global concept towards the integration of academic and non-academic elements that focuses on evolving the project profession through principled and value-based methods (Figure 3)

The unique value add to this program is because the student project assessors are Certified Green Project Managers (GPM-b) from GPM Global (USA), who are the accredited body to implement multiple award-winning standards on training, assessments, and certifications. GPM Global is the originator of the Green Project Management global movement which includes models for sustainability, training, and certification of individuals based on the following principles:

1. Commitment & Accountability - Recognize the essential rights of all to healthy, clean and safe environments, equal opportunity, fair re-numeration, ethical procurement, and adherence to rule of law
2. Ethics & Decision Making- Support organizational ethics, decision making with respect for universal principles through identification, mitigation, and the prevention of adverse short and long-term impacts on society and the environment
3. Integrated & Transparent - Foster the interdependence of economic development, social integrity, and environmental protection in all aspects of governance, practice, and reporting

4. Principles & Values-Based- Conserve and enhancing our natural resource base by improving the ways in which we develop and use technologies and resources
5. Social & Ecological Equity- Assess human vulnerability in ecologically sensitive areas and centres of population through demographic dynamics
6. Economic Prosperity- Adhere to fiscal strategies, objectives, and targets that balance the needs of stakeholders, including immediate needs and those of future generations

It is hoped that Sustainability Learning Program (SustLeap), as an enabler in executing the mission in the framework of Malaysian Higher Education 4.0, can accelerate the transformation of Malaysia towards Agenda 2030 as outlined in National SDG Roadmap. A good understanding on how sustainability career can be established within the current employment framework must be professionally established with collaborative effort from industry players, universities, policy makers and investors to ensure the country benefits towards its commitment towards the 17 SDGs. The collaboration may sustain the education ecosystem in order to develop and enhance individual potentials and fulfil the nation's aspirations.

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