

# Trinity of Higher Education Sustainability

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## Abstract

Sustainable Development (SD) is an important theme of globalization. It covers issues concerning environment, community, and human life. Education's role in SD is well recognized, and SD has become a focus of educational innovation in terms of curricula, research, societal outreach activities, and campus operations. However, the sustainability of education itself has not been integrated in the discussion of SD. In addition, Higher Education Sustainability (HES) is mostly interpreted at the institutional level. This article advocates education being an integrated part of SD, interprets HES from perspectives of educators and students as well as institutions, and discusses the practices of HES, the perspectives of HES, and what they mean to professors and students and how to ensure the sustainability of faculty and graduates within a sustainable university. The involvement of a university, its faculty and students in SD is only a part of HES. The process of HES is synchronized at three layers and covers the sustainability of universities, educators, and students. The most important indicators of HES include institutions with an ever-innovating mission, faculty with updated multi-competences, and college graduates with global talent and a global mindset. This article integrates education's involvement in SD, the inclusion of educational sustainability in SD, and the trinity or three dimensions of HES.

**Keywords:** Higher Education Sustainability, Ever-innovating Mission, Updated Multi-competences

## Introduction

Sustainable Development (SD) is an important theme of globalization. Human beings have realized that our future relies on what we are doing now and actions taken by individual countries will have an impact on the whole globe. Sustainability is an important concept on what we do from a spatial-temporal perspective in the age of globalization. The creation of a sustainable society and globe depends on a SD in the fields that are related to people and the planet including resources and energy. Most importantly, the creation of a sustainable society relies on both human resources in SD and SD of human resources. The former concerns manpower in fields of SD and programs in university curricula that focus on sustainability of people and the planet; the later concerns sustainable capabilities of people that can be applied in real situations and face the challenges in the future.

Sustainability is an important term in literature with two meanings: one indicates concrete tasks in specific fields concerning the SD of the planet, for instance, programs in “environmental degradation, poverty, inequality, climate change and global financial crises” (Macquarie University, 2015); the other focuses on participation and performance of people and their institutions in the SD of the planet. Therefore sustainability can be understood within a three-dimensional paradigm: individual, institutional and international dimensions of sustainability, or sustainability of people,

institutions and the planet. This paradigm implies the sustainability of individual human beings regardless of their sex, race, age, and socioeconomic status, the sustainability of institutions including schools, companies and organizations, and the sustainability of the globe shared by all nations. The paradigm of sustainability shapes the future of people, institutions and the planet.

As mentioned above, sustainability is a general theme that covers aspects of every individual, their small units and big environment. This article, however, focuses on sustainability issues related to higher education as an institution, and students and teachers as individuals. It integrates education's role in Sustainable Development (SD), the inclusion of educational sustainability in SD, and three dimensions or the trinity of HES: sustainable university, faculty and graduates. As an important sector and actor in SD, higher education has to be sustainable.

## Role of Higher Education in Sustainability

"There's no alternative to sustainable development" (Nidumolu, Prahalad, & Rangaswami, 2009). As an important social sector, higher education has "unique potential to catalyze and/or accelerate the transition to sustainability" (Stephens, 2013), and has a public mission as well. SD is an important theme of globalization. It covers issues concerning environment, community, and human life. As mentioned above, there are three perspectives of SD and three dimensions of HES, there are also three aspects of the role of higher education in sustainability. The 1st role of higher education in sustainability can be understood as its participation in SD through joint programs in the areas of sustainability with companies, organizations, or communities. For instance, through its Graduate Program in Sustainability Science, the University of Tokyo contributed to a sustainable urban development in the areas of improved sanitation, solid waste management, renewable energy, poverty reduction, and food security in Africa while promoting the research in other fields of SD (Mutisya, 2011). The 2<sup>nd</sup> role of higher education in sustainability is its contribution in cultivating the manpower for SD through programs in leadership, sustainability sciences and social sciences. For instance, the global talent program (GTP) in many universities can be considered a program of social sciences in sustainability. In discussing the cultivation of global talent Lincoln (2013) states, "Global talent are high-quality human resources and key figures to innovation, cooperation, and integration in globalization" "who posses a global mindset and heart, glocal (global + local) cultural knowledge, and global competencies to handle cross-cultural tasks and global operations." Through GTP, higher education helps to meet the challenges in shortage of specific talents and skills needed for sustainability. The 3<sup>rd</sup> role of higher education in sustainability is its practice in institutional sustainability while enhancing its own sustainability. Higher education is an important sector of a society. It is necessary and important to have a sustainable higher education to promote the research and development in, and to produce quality manpower for, sustainability.

SD has become a focus of educational innovation in terms of curricula, research, societal outreach activities, and campus operations. Research and development of SD in related fields should be one of the focuses in university mission and vision due to the responsibility of higher education for societal good. Through curricula and courses aligning with SD, universities

continuously cultivate human resources needed in SD frontier. Since the key to sustainability is innovation, higher education needs an ever-innovating mission, and sets up an objective of teaching and learning the updated multi-competences underpinned by sustainability.

### **Ever-innovating Mission**

The broad meaning of sustainability goes beyond saving the planet. As Shephard pointed out (2010), “it is education for the purposes of saving the planet and other entities... such as cultures and economies.” In order to play the above-mentioned three roles in sustainability, higher education needs an ever-innovating mission that faces the challenge in an ever-changing world and targets the frontier of SD. Institutions of higher education need to include sustainability as a main theme of their missions so that they can play unique roles in saving the planet, cultures and economics, and contributing to the research and development in SD. In other words, the core of the university’s mission is to ensure the role-play of higher education in SD. The most important task in this mission is to train and cultivate sustainable human resources for the SD of individuals and institutions as well as the SD of the planet. An ever-innovating mission keeps higher education in the course of sustainability, and links curriculum with SD.

In the broadest sense, the missions of universities share the same theme and some common characteristics of higher education. The most important common characteristic of higher education institutions in globalization is having an ever-innovating mission, and sustainability is the common theme of this mission. Under this mission, the most important vision would be that all administrators, teachers, and students stay sustainable with updated multi-competences respectively.

### **Updated Multi-competences**

Nidumolu, Prahalad, & Rangaswami (2009) point out that smart companies treat sustainability as innovation’s new frontier. “By treating sustainability as a goal today, early movers will develop competences that rivals will be hard-pressed to match.” Innovation in curriculum by adding courses and programs in SD will make a university more competitive to other institutions and more attractive to high school graduates. There are a wide range of SD courses such as “food security, urban, transport, forestry, leadership, economics,” etc. (Mutisya, 2011). Individual colleges offer the courses related to SD that can be integrated in their curricula whereas a comprehensive university can include a variety of SD courses within the curriculum if it has the experts to teach them.

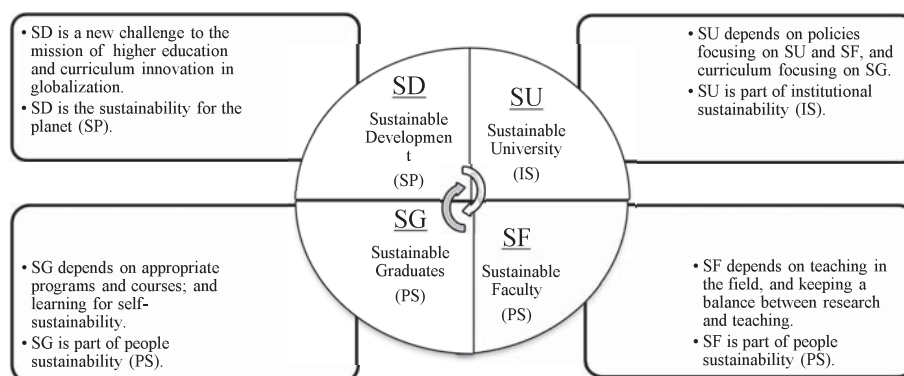
SD knowledge and skills are necessary traits for global talents. Graduates who have taken the courses that provided them SD knowledge and skills are more ready to have a career in SD. It is an important task of universities to educate students “who can take an active role in efforts to achieve sustainability in a socially, culturally and economically diverse international society” (Mutisya, 2011). There are some of the competences for SD that students cannot gain in classroom, but they can participate in projects on issues of SD that aim at problems in the real world. For instance, students of the courses under the names of *The Sustainable University*, and *Sustainability and the Role of Higher Education* at Clark University “engage directly with the challenges associated with

promoting sustainable behavior and fostering institutional and social change through semester-long team projects focused on specific sustainability initiatives” (Stephens, 2013). By participating in resolving problems of unsustainability in the real world, students practice the knowledge and skills they have learned, play their roles in SD of society, and enhance their own sustainability.

Higher education institutions including comprehensive, liberal arts, engineering, and medical schools should make sustainability a compulsory course for students across the curriculum. The goal of this course is to cultivate students’ mindset on sustainability so that they can make their study plan connected with SD and their personal sustainability. It is the duty of higher education to teach students with various knowledge and skills within the paradigm of sustainability. University teachers are taskforce to carry out the role of higher education in sustainability. University faculties should consist of international-minded professionals and researchers with expertise of SD. In order to be able to train students’ capabilities of SD, teachers have to have a strong awareness of SD, and do more research in related fields in or for SD. Faculty’s role in SD is to prepare new courses and promote the advancement in SD, and to apply research results to benefit people and the planet.

Sustainability is not simply another theme to be added in our mission and vision neither is it another course to be taught within a curriculum. It is a fundamental change in the ways we view higher education and its trinity of institution, faculty, and students. To be able to play a role in SD, higher education itself needs to be sustainable. In addition to integrating SD related subjects or areas into the curriculum, co-curricular projects, research, and societal outreach activities, the sustainability of higher education is an important part of SD within the paradigm of sustainability. HES consists of sustainable universities, faculties and graduates, but its impact is greater than the sum of SU, SF, and SG.

#### Integration of SD in HES (SU, SF & SG)



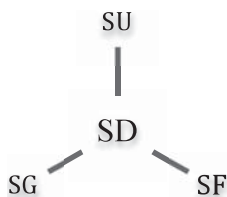
HES implies that the higher education in globalization has to be within the paradigm of sustainability. The integration of SD in HES covers the concrete and abstract coordinates of sustainability in higher education. As the chart above shows, SD involves university mission and curriculum innovation and includes concrete innovations in courses and programs in which both faculty and students are actively participating. SD is a denotation of HES whereas SU, SF and SG

are the three connotations of HES. SU, SF and SG as abstract coordinates determine the levels and success of HES. SD, SU, SF and SG are compatible, and their integration is the process of them becoming a centripetal force in HES that involves the whole academic community including institution, faculty, and students. It is a dual process of maintaining the SD of university, faculty and students, and implementing SD in teaching, learning and research. The combination of SD, SU, SF and SG is the formula of higher education in globalization that aims at two missions: “the advancement of individual or the betterment of society” (Gates, 2008) with SF and SG aiming at the 1<sup>st</sup> mission and SD and SU the 2<sup>nd</sup> mission.

As the chart above shows, SD, SU, SF, and SG are the four aspects of sustainability within the framework of HES whereas SP, IS, and PS are the three aspects of sustainability within the paradigm of sustainability. So the conception of sustainability displayed in this chart implies a multi-dimensional and full range of meanings of sustainability at both individual and institutional levels and from both concrete and abstract perspectives. In conclusion, higher education institutions should be the role model for sustainability while connecting its mission to society’s quest for sustainability. In saving the planet, cultures and economics, higher education plays its roles in sustainability while maintaining its own sustainability.

### Trinity of Higher Education Sustainability

“Education is the key to producing citizens knowledgeable in ways to conduct sustainable lives and create an environmentally sustainable society” (Gates, 2008). In the course of sustainability, higher education takes the most responsibilities since it distributes the knowledge of sustainability in depth, and it deals with adult students who are responsible for SP, IS, and PS. In discussing the role of higher education in sustainability, we focus on “the integration of sustainability into higher education” (Sterling, 2004). But HES is about sustainable higher education that focuses on “the necessary transformation of higher education towards the integrative and more whole state implied by a systemic view of sustainability in education and society” (Sterling, 2004). As mentioned above, higher education plays a key role in the ways of producing manpower for and participating the R & D in SD. However, the depth and breadth of higher education’s involvement in SD depend on the SD of higher education or HES.



HES is an integrative trinity of SD in higher education including sustainable university, faculty, and graduates (SU, SF, & SG). In other words, HES has to implement SD at three dimensions of institution, educator, and students.

### Sustainable University (SU)

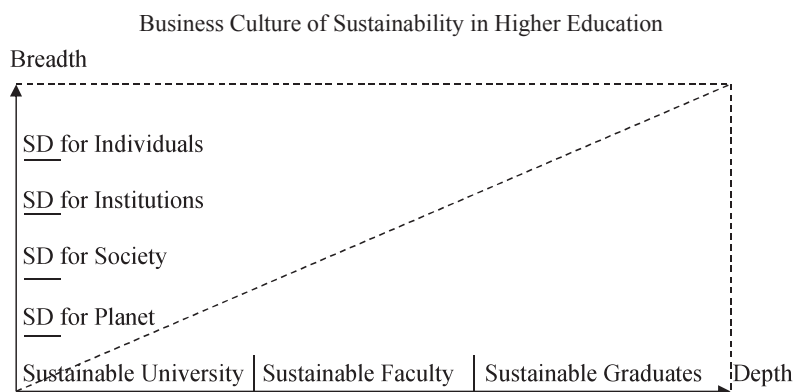
Sustainability challenges universities around the world to rethink their missions and to re-structure their courses, research programs, and life on campus (Corcoran, and Wals, 2004). Institutional Sustainability in Higher Education covers curricula, research, societal outreach activities, and

campus operations to “respond sufficiently to the wider context of the crisis of unsustainability and the opportunities of sustainability” (Sterling, 2004). Factors that sustain SU are as Shephard (2010) listed, research funding, student recruitment and retention, accountability in learning and teaching, and the financial situation. This article discusses these factors except the financial issues, and adds “Business Culture of Sustainability” as an important factor.

### 1. Business Culture of Sustainability

Ye (2004) defines *corporate culture* as the common value system under the guidance of corporate philosophy, and uses the term *corporate spirit* to emphasize the importance of corporate culture and its relations with enterprises and their behaviour. According to Ye, a company should be run with spirit not by system. A business cannot survive without a good culture, and only good business culture can guide a company towards success. While a company is prosperous because of a good business culture its long term expansion and success depend on a business culture of sustainability.

Every institution should build up a business culture of sustainability. Within this culture, every operation or performance focuses on sustainability. Sustainability is realized at both individual and institutional levels. Based on this business culture of sustainability, waste of human energy, disharmony between institutions, between individuals and institutions or among individuals, and negative force will be reduced to the minimum.



The chart above illustrates the business culture of sustainability at a higher education institution in breadth and depth. SD as the core of university’s mission and vision exceeds the common understanding of SD, and covers a maximum range including the SD of the planet, society, institutions, and individuals, which would be the focus of all university’s operations. Courses, programs, and activities aim at the SD of the planet, society, institutions, and individuals. To reach this goal, the operation of sustainability has to have depth. In other words, only with the trinity of SU, SF, and SG can a university be successful in the tasks of SD for the planet, society, institutions, and individuals.

The core competitive ability of a university is something that exists within the university. The sustainability with breadth and depth is the most important competitive ability of a higher education

institution in the age of globalization.

## 2. Sustainable Curriculum

Curriculum consists of course syllabi that include learning goals and objectives aligning with the defined graduate capabilities. The sustainability of curriculum is about “providing our students with an opportunity to learn the appropriate skillset, alongside the appropriate mindset, in order to deal with an ever changing world” (Macquarie University, Jan 9, 2015). Sustainable curriculum must be practical and innovative that links to the sustainability of people, institutions and the planet. A practical and innovative curriculum benefits students so that they can “meet expectations of employers” and “better equip our students to deal with the challenge inherent in society” (Macquarie University, Jan 9, 2015). The fundamental goal of university curriculum is to give college students opportunities to learn necessary and useful knowledge and skills while helping students in their transition to adulthood in aspects such as maturity and morality. It is university’s responsibility to design a curriculum closely related to this goal. Courses have to be grouped into modules systematically with specific objectives and contingency. For instance, foreign language courses should be in the same module with other courses with an international and global orientation. The goal of this module is to provide knowledge and skills for global talent. In order to reach the goal of cultivating global talent, the objective of foreign language courses is to teach students a “whole” of at least one foreign language so that students master that foreign language at an intermediate level. In other words, students can conduct simple conversation in that language, know the basics of that language for further learning on their own, and possibly use the language at work in the future. In this way, language courses are integrated in a sustainable curriculum, and the language skills students acquired from the course are sustainable.

In order to keep its sustainability, the university curriculum has to be always improving and under reconstruction to fulfill university’s ever-innovating mission and to teach students updated multi-competences. Co-curricular projects supported by teachers such as community service or other societal outreach activities and extra-curricular programs run by administrators such as study abroad and internships are also indispensable components of a sustainable curriculum. The curriculum not only outlines a structure of knowledge and skills for students but also shows the directions and areas of research for teachers. For instance, courses such as Sustainability Education and Business Sustainability can be both the content for students to learn and a field for teachers to do their research. In fact, the course of sustainability education should be a necessary course for students in any majors. The main objectives of this course are for a mindset of sustainability, basic knowledge of sustainability issues, and individuals’ role in sustainability including own behaviors and contributions to others.

A sustainable university has to connect itself with its community and environment. However, its internal harmony and efficiency ensure its external operations and functions, thus the key to SU. The internal harmony and efficiency of a university are decided by, and reflected in its campus operations



### 3. Campus Operations

In addition to curricula and research programs, universities integrate sustainability through campus operations, and each operation plays a certain role for institutionalizing sustainability of the university.

#### 3.1. Faculty Stability

SD in human resource is probably the most important aspect of HES. To university administration, faculty stability is one of the important campus operations, and ensuring the best use of every educator is the key to HES. Faculty stability begins at hiring, which means hiring the right persons to teach respective courses. The necessary qualities for a sustainable teacher include knowing the teaching content, being trained as a teacher or at least having the appropriate personality and characteristics to be a teacher, and being a role model for students in ethics of behaviors and habits. In this way, it is more likely that teachers perform well in teaching, enjoy teaching, are satisfied by the university, and welcomed by their students.

A doctorate degree indicates the specialty in a certain field, but there is no necessary connection between a Ph. D. and a good teacher. For instance, pedagogy and practice teaching are the two required courses in any normal universities and teacher programs including some other programs in education. Another situation is that a Ph. D. holder might be interested not in teaching but in research, and therefore puts more time into research that hardly brings any benefits to teaching if the degree is in a subject different from what he/she is teaching. Doing research in an irrelevant field to the subject of teaching might be helpful for that teacher's personal sustainability, but it does little good to university's sustainability and gives no contribution to students' sustainability. According to the author of this article, a Masters degree in the right field with practical training in the classroom or basic practices from a teacher training program are the necessary conditions for teachers in undergraduate programs. A doctorate degree in the right field is a sufficient condition if this Ph. D. holder had training in practice teaching or some related experiences. But a doctorate degree from another field without any trainings or experience cannot be considered a necessary condition for being a teacher.

The Emeriti/Retirees Relations Center (ERRC) at UCLA sets up its mission to develop services for the wellbeing of retired faculty and staff. It promotes a retirement-friendly university by creating and implementing policies and programs that assist the employees with retirement planning and the transition to life after full time work. Retirees have sacrificed their valuable years or entire life for the past and present development of a company or an institution. The university will not be sustainable without their contribution. The meaning of recognizing retirees' contribution cannot be calculated on the basis of the money. Ignoring doing this directly affects faculty stability and destroys the reputation of the university. More importantly, it destroys university's business culture of sustainability

#### 3.2. Teaching Evaluation

The teaching evaluation (TE) is a common practice to get feedback from students on the course



quality at the end of each course in most colleges around the world although the procedure and its weight on judging teachers' performance vary. TE can have either a positive or a negative impact on the sustainability of the university and faculty depending on whether TE serves the purpose of quality assurance, whether the evaluation questions are in accordance with the essential aspect of courses, and whether students' answers to the evaluation questions reflect not teachers' personality or popularity but teaching quality. What to evaluate has to serve the purpose of improving educational quality. It has to be directly related to the content of the subject, appropriate teaching methodology, and students' achievement through the course (Zhu, 2014).

A reliable and credible TE used as the resource of teachers' advancement and promotion plays a positive reinforcement on quality assurance in teaching and learning, but the positive reinforcement of TE on teaching sustainability only happens when students answer relevant qualitative questions and the outcome of rating is analyzed quantitatively with the depth in understanding the subject matter and the correlation of TE and pedagogical activities. Quantitative and qualitative methods in TE are mutually supplementary and supportive. On the one hand, educational quality can be displayed through numbers based on statistical and positivist research. They are facts interpreted in mathematical language to show certain relations between variables that can be relevant and valuable to the analysis of teaching practice. On the other hand, in the fields of social sciences or humanities, numbers are not simple and objective facts but numerical phenomenon with a value orientation. Without qualitative consideration, the questions of TE can be irrelevant, and the results of TE can be misleading, especially in a situation where there are no differentiations between student numbers in classes. In addition, the way of conducting the TE must be standard, either by teachers or by students.

A reliable assessment depends on multiple tools such as surveys, tests, interviews, case studies, behavioral observation, learning results, and other specially designed means and procedures. In case of the TE, a mixed model plan can be applied to combine the strengths of both quantitative and qualitative approaches. In a mixed model plan, numbers add precision to words, and words add meaning to numbers. The mixture of fuzzy statistics and multi-dimensional analysis can produce TE results close to facts and a science. Most universities choose TE questions from the aspects of educational institute and pedagogy. The real challenges to TE are to include the aspect of TE participants who answer these questions and to make TE questions that can be answered free of non-teaching-related impression and immediate reaction. The impact of TE on sustainability depends not on the TE process itself but on how the university interprets and how teachers react the TE results. TE takers are students who are familiar with neither teaching content nor teaching methodology. They answer TE questions based not on scientific standards of the subject and methodology but on their impression and understanding. It is important to get the feedback of teaching from students. But students cannot be the judges of good teaching, at least, not the only judges. TE results can only be a reference to teaching quality, but certainly not the only reference, and even not the most important one. If the university judges a teacher's teaching quality only according to the TE results, it will possibly have a negative impact on SU, SF, and SG in terms of teaching quality. For instance, some teachers blame the difficulty of teaching content for a bad TE

result. They make the teaching content much easier than the standards of college courses in order to get better TE results. This negative reaction hurts the sustainability not only of teachers but also of students, especially those motivated students at a higher level.

How to run and interpret the TE have impacts on SU, SF, and SG, either positive or negative. Sustainable TE must encourage efficient learning, educational equity, and teaching accountability, and become a positive force to teaching and learning sustainability. University administration should run the TE scientifically and interpret the results professionally. Otherwise it will turn the TE into a negative operation towards university sustainability in terms of teaching quality, professional assessment, fair promotion, etc., thus damage the business culture of sustainability of that university.

### 3.3. College Admission

College admission is an important link in HES. It is directly related to a sustainable university and its faculty, especially to sustainable graduates. HES implies admitting students with potentials in sustainability as college graduates who have capabilities and capacities to complete all courses and be ready to serve the society. Standards in admission ensure the success of a majority of students and maintain reasonable ratios between enrollment and dropouts, and between course registration and course failures. Imbalances in these ratios indicate insufficiencies of the university in its sustainability. A person who is not sustainable as a college student might be sustainable or even very successful in another track. Entering a wrong track of education is sustainable to neither the student nor his/her parents for it is a waste of a student's time and the parents' money.

Curriculum supported by research, social outreach activities, and campus operations are important connotations of a sustainable university; the denotation of a sustainable university is the SD of this university as a small society. The population of a university includes students, faculty, and staff. How the services to this population are provided "is what determines a university's relationship within the natural world, i. e. how sustainable it is" (Gates, 2008). For instance, dining halls that provide healthy foods, on-campus dormitories for students especially those who live far away, and school shuttle buses for certain routes all contribute to SD and SU.

SU depends on "where and how university operations, both academic and logistic, intersect with the environment" (Gates, 2008). University's ever-innovative mission and students' updated multi-competences mainly depend on curriculum and campus operations. The practicality and innovation of a sustainable curriculum have to be linked to institutional sustainability of the university and individual sustainability of teachers and students. A university cannot be sustainable without sustainable teachers and students. It is important to develop SU "in a systemic and whole institutional manner, including the role of organizational learning" (Sterling, Maxey, and Luna, 2013). A whole picture of SU is that "operations provide the framework within which" academics distribute the content and "students can function sustainably" (Gates, 2008). In short, SU will attract and retain better teachers and students and maintain a virtuous circle for SU.

### Sustainable Faculty (SF)

Human resource in HES includes faculty and graduates as well as administrators and other employees. University faculties consist of those with dual identities of educators and academics. In general, these two groups of people have different perspectives in their sustainability: educators lean more towards knowing the content of subjects and teaching methodology in the field; and academics focus more on contributing to theoretical research and practical innovations within their expertise. Being trained with basic practices and having studied various theories in the field through a doctorate program are conditions both necessary and sufficient for sustainable academics. But for educators, their sustainability depends more on knowing the subject and teaching methodology than a doctorate degree and research in another field, especially for those who teach only undergraduate courses at a teaching focused college.

In many countries, schoolteachers have to be trained in a teacher program or within a curriculum at a normal university that provides key courses in education such as Pedagogy, Educational Psychology, Special Education, etc. In addition, practice teaching for at least one semester at a school is a required program, which includes syllabus composition, course preparation, classroom teaching, and homeroom teacher experience. The 1<sup>st</sup> year after they were hired as university teachers, they do not teach subject courses but run some tutoring classes. For the next four years, they teach their subject courses as assistant professors under the guidance of professors. It would be very difficult to be a sustainable educator without these necessary trainings and experiences. Due to the dual identities of higher education teachers, SF has to include the following three aspects: teaching in the field, teaching for sustainability, and academic development for both research and teaching.

#### 1. Teaching in the Field

If a college professor teaches the subject of his/her specialty, it is more likely he/she has sufficient knowledge to teach. This also implies that the very professor is more likely to integrate the research in teaching, thus to improve teaching while bringing benefits to both teaching and research. In this way, this teacher will consider teaching as part of career development because it relates to his/her research interests. A teacher from the field can teach the content with deep understanding and thorough theoretical background, and better guide students in the field. More importantly, this teacher is more likely to be familiar with the methodology of the subject, and continuously improve teaching skills and quality through academic activities including joining associations and participating conferences.

A teacher may teach a course that focuses on sustainability by the very nature of the course if his/her field is related to SD. In this way, improving the teaching is part of SF while contributing SG so that students can apply what they have learned and take initiatives in sustainability for themselves (SG) and for the planet (SD). Moreover, when teaching is research-informed, it will enhance the sustainability of students' learning in the subject. Teachers who do not teach in their fields, however, still can embed sustainability through a pedagogical approach to ensure students to learn the knowledge and skills they need in SD and for SG.

## 2. Teaching for Sustainability

Sustainability is a new theme in globalization. Any teaching no matter in which fields should be conducted within the paradigm of sustainability. The first task is to make a non-SD course sustainable. Teachers have to teach in a sustainable way for both students and teachers themselves. The knowledge and skills covered in the course have to be innovative and practical to make the course and the course teacher sustainable. The knowledge and skills students learned from the course are sustainable so that they can be important traits of students and useful competences for their future career. The second task is to relate the course to SD. For instance, Global Leadership can be a new course in management with a theme of sustainability. Business Sustainability focuses on issues in sustainability such as business efficiency, resiliency, and accountability. Business Sustainability should be included in the curriculum of a business school as a core course. The third task is to explore the new frontier courses of SD. For instance, traditional courses in fields of agriculture or environment should add the sustainability as a new theme and core value, and develop the courses with ever-innovative information and updated technologies. In conclusion, teachers of any courses in above-mentioned three categories have to teach students the innovative and practical knowledge and skills, for which it is an indispensable trait for SF. Teachers in higher education should advocate for, and contribute to sustainable planet, cultures, and economies, and to sustainable people as well.

## 3. Academic Development for both Research and Teaching

Faculty training and development are important parts of SF in a SU. Since universities may only organize limited faculty development programs based on common needs of all teachers, faculty needs to take initiatives on the development with focuses on research and teaching in related fields. Higher education educators have to have a balance between research and teaching. In some universities, professors may have a high proportion in research and a light load in teaching than assistant professors whereas in other universities all teachers have the same teaching load. In either way, academic development of faculty has to cover both areas of teaching and research. In other words, improvement of teaching needs teachers' effort as much as their research does.

If an academia is hired to teach a subject that is not of own specialty, he/she probably needs to put more effort on teaching, at least for the first a few years. From a business point of view, you are paid mainly for teaching the subject with students' tuition. Teaching is your necessary job, and should be considered the first priority. In terms of Teaching Evaluation, teachers should read the results of TE not from the consideration of their own bonus or promotion but from the perspectives of SF and SG. The focuses should not be on how to meet the low expectation from students or how to please students to get a better TE but on how to teach more efficiently for SG. To an educator, teaching is a necessary task. However, research is a sufficient credential for long-term academic development. For those research-focused scholars, getting fund from government or organizations, or finding a job in a research institution is a better solution.

A sustainable faculty saves energy for administration in human resource management and hiring, and reduces negative forces among, and turnover, of teachers. More importantly, faculty

sustainability leads to more effective teaching and creates harmony among staff and between teachers and students. Maintaining SF is an important task for maintaining SU. University operations and the academic side “can be joined, producing significant opportunities for interdisciplinary and sustainability education” (Gates, 2008). In addition, university should provide teachers opportunities to improve both their teaching and research. In doing so, faculty not only participates in education for sustainability, but also contributes to SD, SU, and SG, and SF as well.

### **Sustainable Graduates (SG)**

While faculty sustainability starts at hiring student sustainability begins with appropriate enrollment that is neither too strict nor too loose to include maximum candidates who have potentials for being sustainable. Faculty sustainability focuses on how to be both a qualified educator and dedicated researcher whereas student sustainability is about young people whose future career is full of uncertainties and opportunities. College graduate sustainability depends on a suitable field at an appropriate university, learning needed knowledge and skills, and aligning current learning with future career.

#### **1. Suitable Major and Minor at an Appropriate University**

Before getting into a college, high school graduates need to know their strength and weakness, interests and potentials, and choose a field in which they are most likely to be interested and successful. In this way, what they learn at college can be sustainable, which will affect and benefit their whole life. The suitability of major or minor to individual students depends on many factors. First, it depends on personality. Some fields are more suitable for people with an extroverted personality, others for people with an introverted personality. Some majors lead to jobs more suitable for extroverted people, for example, salesmen, counselors or social workers. Other majors lead to jobs more suitable for introverted people including some positions in technology or research. Second, it depends on learning style. Students approach the same knowledge in the same classroom differently simply because they are different learners with own styles and habits, and with individual strengths and weaknesses (Lincoln, 2011). According to the theory of multiple intelligences (Gardner, 1983; 1993), each individual manifests varying levels of eight intelligences: linguistic, musical, logical-mathematical, spatial, bodily kinesthetic, interpersonal, intrapersonal, and naturalist intelligences. Whether being a visual or audio learner, and strength in various intelligences are important factors in choosing a major at an appropriate university. Third, it depends on learning history or existing knowledge. High school graduates have learned and been exposed to many branches of knowledge during their twelve-years’ precollege education. Having certain learning experiences or having knowledge or skills in certain aspects often affect their decision making in choosing a major, a college, and a career. Choosing something they enjoyed and were good at increases the possibility of being successful. Fourth, it depends on capacity and potentials. Capacity and potentials are important factors for being successful. They are connected with learning styles and can be traced in past experiences. Although it is better to know their own capacity and potentials before they choose a major, it is not too late when they are already

in a university. College students may find out their special capacity or potentials in course taking or project conducting. Learning the subjects with own capacity makes learning more efficient and more sustainable. Meanwhile, what they have learned can not only last but also reach their potentials. Fifth, it depends on opportunities through family, friends, other social connections, or unexpected opportunities. People have to be prepared for opportunities to come, but they do not always run into opportunities. For an once-in-a-lifetime opportunity, it is worth to be chosen as the focus of a program or a major. However, it is one of the most difficult decisions people have to make, especially for young people around age of 20. The above analysis is based on general cases, and exceptional cases always exist in each of those five areas.

## 2. Needed Knowledge and Skills

In order to be sustainable, college students have to learn needed knowledge and skills for SG through courses, teachers' advices, and self-initiated tasks. The needed knowledge and skills are constantly changing depending on economic advancement, technological innovation, and social development. A university designs its curriculum and programs along with its mission and vision at a macro level. Each student is unique in terms of his/her strength and weakness, perspectives and potentials. Students have to take initiatives for their own sustainability at a micro level. Therefore, the needed knowledge and skills have to be multiple, contingent, and updated, which needs an individual attention for the purpose of SG. Many students take courses only for credits without a clear goal, or do not connect the course taking to their future career. Due to this phenomenon, many courses they took are not sustainable. For instance, some students take a few foreign languages at the same time, and stop learning these languages at the introductory level. Foreign language learning often falls into a situation of either whole or nothing. A two-credit foreign language course will not lead its students to the mastery of that language as a whole. It ends up wasting of time in terms of sustainability. It is difficult to be successful to learn a few foreign languages at the same time unless for a language genius. Both situations of foreign language learning mentioned above will lead an unsustainable learning because the learners cannot use the language, and gradually forget what they have learned from a two-credit course.

Needed knowledge and skills for college graduates are more than those in SD although these knowledge and skills are more likely lead them into a job in need so that they can participate in SD for a sustainable world. More importantly, those knowledge and skills have to be mostly relevant to individual students' sustainability in terms of their interests, capacities, potentials, and possibilities. In addition to learn the needed knowledge and skills for sustainability through "formal-learning activities," there are "informal and non-formal" (Shephard, 2010) learning opportunities outside colleges and after graduation that are necessary for SG.

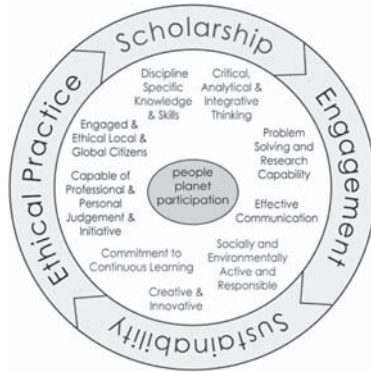
## 3. Aligning Current Learning with Future Career

In order to be sustainable to meet the needs of society now and in the future, people should look into the trends of social development and possible long-term career opportunities for themselves. It is unlikely that the college curriculum completely prepare graduates for jobs that have a perfect



match to graduates' traits and potentials. Whether aligning current learning with future career is a part of SG and the assurance of SG as well.

At Macquarie University in Australia (April 2015), “sustainability is included as one of the four guiding principles underpinning undergraduate capabilities. It also features heavily within the curriculum theme of People, Planet and Participation.”



The chart on the left shows that under the theme of people, planet and participation, the curriculum is designed for cultivating students four sets of skills and traits: scholarship, engagement, sustainability, and ethical practice. Scholarship covers discipline specific knowledge and skills, and critical analytical and integrative thinking, which are the two learning objectives for most college courses. Engagement covers problem solving and research capability, and effective communication, which are the basic skills for participation. Sustainability is to be socially and

environmentally active and responsible, creative and innovative, and committed to continuous learning. Through ethical practice, students are to be engaged and ethical local and global citizens who are capable of making professional and personal judgment and initiative.

College students cannot expect to definitely be able to take all sustainable courses in an appropriate program at a right university for SG. They have to be the designers for their knowledge sustainability. To most people, four-year college is the only life experience in which they can learn the knowledge and skills as an adult that make them a living or lead them a career. If the university they are attending does not have a curriculum that teaches them what they need for their sustainability as showed in the chart above, they can choose courses according to their needs and learn the course contents in a sustainable way. For instance, learning a foreign language is for communicating with foreigners, and possibly living and working in the country of that foreign language. With a clear and long-term goal, their foreign language learning can be sustainable in terms of the above three goals. A sustainable foreign language learning implies two aspects. First, they have to learn the very foreign language as a whole and reach at a practical level, which means that they master the skills of listening, speaking, writing and reading of that language in a balanced way and be able to maintain the language. It is not sustainable to learn a few foreign languages at the same time but could only reach a low level with a minimum mastery, and then forget the most of it after a few years. Second, in order to make the foreign language learning sustainable, a course in culture and society or in other aspects of that country should be considered for it enhances the sustainability of both the language learning and overall knowledge pursuing. In conclusion, the sustainability of knowledge and skills students learn at college decides whether they are SG, and the right of decision-making is in the hands of students themselves. In order to be SG, their course work has to be connected to certain things that they are interested in, and capable of, doing with their capacity and potentials. Thus, their learning will not only make themselves sustainable, but also make the university, people, and the planet sustainable. SG is an indispensable link to SD, SU,



and SF within the paradigm of sustainability.

## Conclusion

Sustainability has become the dominant paradigm in globalization. Sustainability in its general meaning is to save the planet whereas in its specific meanings is to save economies, cultures, institutions, and education including schools and universities, and to save human beings including college teachers and students. HES is related to survival, development, and success of universities, faculties and college graduates. Teaching students useful knowledge and skills including those in the frontier of SD, making students sustainable both integratively and instrumentally, and reducing college dropouts in HES are as important as energy efficiency, productivity increase, and waste reduction in SD. HES can lead innovations at institutional level, hire and retain educators who are qualified in both knowledge and morality, and recruit and cultivate sustainable manpower and global talent. Sustainability is the power for innovation. Higher education institutions can be competitive and successful only when sustainability is realized as a trinity at three dimensions of institute, faculty, and graduates. The sustainability of a university depends on the sustainability of its faculty and graduates; and faculty sustainability is the key to both university sustainability and graduate sustainability.

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