Sustainability Mindset with Disruptive Quality Indicators

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Aim

The purpose of this paper is to review the ways of developing sustainable development (SD) mindset via quality indicators, including visual assessments to engage students, to explore, to explain, to elaborate and to evaluate the levels of sustainable development mindset of learners to become a future sustainable development leader.

Sustainability Mindset with Disruptive Quality Indicators

The Internet gave rise to the possibility of a whole new range of online resources. However, the pros and cons of using technological-related resources have been debated." (p. 413). Moreover, Bullivant (2005) mentioned that the fourth dimension had transformed a new identify of space that featured in spatialization of time with revolutionizing and re-inventing our work, leisure and space. In the digital age of today, the aim of the study is to motivate teachers to develop a new way of thinking in creating a platform for learners to learn and to experience through pulling the needs of a diversified group of learners with different cultural background for a common goal - designing innovative curricula to engage learners for new knowledge production.

Sustainability Mindset with Disruptive Quality Indicators

Background

According to UNESCO publication (2014) on assessment and paper (2010) on Education for sustainability (EfS), integration of the principles, values, and practices of sustainable development (SD) into all aspects of education and learning, including assessment are important to address the social, economic, cultural and environmental problems we face in the 21st century.

Background

Understanding the global and local environment and documents related to entrepreneurship education and sustainable development are needed for programme design, implementation, monitoring and review process.

Example documents are:

1) UNESCO documents on entrepreneurship education (EE) and sustainable development (SD) in higher education,
2) Government Policy Address of 2015,
3) Manpower projection reports of Hong Kong government, and
4) Education Bureau (EDB) requirements on Qualification Framework (QF) levels about the programme learning outcomes.

This is to correspond to the recommendations of Economist Intelligence Unit (2014) that policy choices and the cultural environment were needed to help aspiring entrepreneurs understand how they could avoid some of the many pitfalls of starting a business.

According to the definition of the Brundtland Commission (1992) of the United Nations, "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The basic element of sustainability is the economic aspect to support a business in the short term.

In the higher education sector, issues related to the learners, suppliers of knowledge, for example, teachers and industry speakers, programme accreditation organizations, and community needs need to be considered in the processes of strategic planning, strategy implementation, performance review and performance measurement.

ISO / System thinking and Sustainable Development Mindset

Based on the ideas of self-evaluation and constructive alignment, the eight principles of ISO share the same kind of rationale in the quality model of higher education.

The eight principles are: Leadership, Involvement of People, Factual Approach, Process Approach, System Approach, Continual Improvement, Mutual Benefit Supplier Relationship and Customer Satisfaction. These principles focus on system conformity, continuous improvement and customer satisfaction. The following ISO 9001: 2008 clauses are relevant to the operations of a higher educational institution.

:

1) Clause 4.1 “Quality Management System”

- Outsourcing control
- Risk and impact
- Purchasing

ISO / System thinking and Sustainable Development Mindset

2) Clause 6.4 “Work Environment”

Tangible

Environmental and other factors – noise, temperature, humidity, lighting or weather Intangible

Synergy, efficiency, effective, psychological, sensitivity, and ergonomics

3) Clause 8.2.2 “Internal Audit”, 8.2.3 “Monitoring and Measuring Process,

8.5.2 and 8.5.3 “Corrective and Preventive Actions”

- “Impact on conformity to product requirements and on effectiveness of quality management system”(QMS)

CSR / Social Responsibility and Sustainable Development Mindset

Cajazeira (2008) also brought forward the major principles of ISO 26000 CSR guidelines: accountability, transparency, ethical behavior, consideration for the stakeholders, legality, international standards, and human rights. It is the responsibility of organizations to consider the needs of the stakeholders in the seven aspects when designing work processes or executing business-related activities.

In fact, both ISO 9001:2008 and ISO 26000 convey a message that non-economic inputs and soft side of outcomes are the trend of quality management system in organizations, including public service organizations.

- Organizational Governance;
- Human Rights;
- Labor Rights;
- The Environment;
- Fair Operating Practices;
- Consumer Issues, and
- Community Involvement and Development.

QF - Literacy / Competency and Sustainable Development Mindset

In Hong Kong, the Qualification Framework (QF) was born in 2008. Based on the information released from the Education Bureau (EDB), the aim of having QF is to help people in Hong Kong to set a goal for life-long learning with qualifications assured through the seven levels of qualifications covering academics, vocational and continuing education.

The QF levels help visualize an articulation ladder for the learners. Levels 1- 3 cover programmes in certificate levels while levels 4-7 cover programmes from diploma, undergraduate degree to master degree and doctoral degree levels. In each level, there are two to six descriptors under each category to measure the learning outcomes of modules in a programme. These descriptors are classified into the following four categories as shown in the following table of level 5 – undergraduate level provided by The Hong Kong Council for Academic Accreditation and Vocational Qualifications (HKCAAVQ):

- Knowledge & Intellectual Skills;
- Processes;
- Application, Autonomy & Accountability; and
- Communication, IT and Numeracy.

Quality Tools (System Thinking and Design Thinking) and Sustainable Development Mindset

The commonly used concepts of Six Sigma in curriculum design for reducing variations are: Quality Function Deployment (QFD) with graphical aid of House of Quality (HoQ) to consider the needs and desires of the customers. This technique has been used by Denton (2005) in curriculum and course design in the academic domain of Management Information Systems (MIS) to address the needs of employers from business school graduates. Other examples are the use of "Supplier/ Input/ Process/ Output/ Customer" (SIPOC), "Define, Measurement, Analysis, Improvement and Control" (DMAIC), and Design for Six Sigma (DFSS).

The focus of this paper is on applying the concept of House of Quality (HoQ) **to minimize the inconsistencies in achieving the identified quality indicators for the overall performance of high educational institutes.** Managing quality relies on using a user-friendly quality tool systematically for a comprehensive picture. Hence, it is expected that the use of HoQ can help in producing the whole cycle of conceiving, planning, producing and delivering competitive customer/ stakeholder value mentioned by Conti (2013).

House of Quality and Sustainable Development Mindset

Benefits of deploying House of Quality of Six Sigma into curriculum design have been found as follows:

- Foster better attention to customers' perspectives;
- Act as a "preventive" quality tool (reducing design changes);
- Shorten development cycles;
- Lower costs with greater productivity; and
- Increase reliability.

Methods – Content Analysis

Sharda et al. (2013) mentioned that analyzing data could be used to understand customers/ clients and business operations to sustain growth and profitability for enterprises. In fact, data can be found in various forms and fashions. Using timely data can help interpret current phenomena for decision making. They further pointed out the following ways for data mining for the benefits in business sustainability (Sharda et al. 2013, p. 155-156):

1) Association – finding commonly co-occurring grouping of things for market analysis;

2) Predictions – identifying the future occurrence of certain events based on what has happened in the past;

3) Cluster Information – seeking the nature of groups of things based on their known characteristics; and

4) Sequential Relationship - discovering time-ordered events.

QF and Sustainable Development

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Research Objectives

1) What are the key elements of HE needed to be monitored for sustainable development?

2) What are the areas needed to further improve to meet the needs of the future?

Methods

Step I :

Comparing the documents of Good Practice of QA Handbook for Sub-degree Sector, HK (2009), Code of Practice Consultation Paper, HK (2014) and Engineering Accreditation Commission (EAC) - Determining Accreditation Decision, Malaysia (2012) with content analysis.

Step II :

Comparing the requirements of ISO 9001 QMS, ISO 26000 CSR & the content analysis results of the three documents.

Step III:

Identifying the key quality indicators for managing the overall system performance of higher education institutions.

Findings

Source of Documents/ Frequency of Text Search	Consultation Report - Code of Practice (2014) Hong Kong	Good Practice Handbook (2009) Hong Kong	EAC Programme Accreditation Document (2012) Malaysia
Engaging diversified stakeholders	91 references (1.17% coverage)	314 references (0.45 coverage)	34 references (0.41 coverage)
Environmental-friendly Concepts	**0**	**10 references (0.02% coverage)**	**1 reference (0.02 coverage)**
Competency	**2 (0.02% coverage)**	**11 references (0.02%)**	**2 (0.03% coverage)**
Competency-based assessment	**0**	**0**	**0**
Real world exposure	56 references (0.58% coverage)	302 references (0.45% coverage)	12 references (0.13% coverage)
Individual learning outcomes	86 references (0.86% coverage)	950 references (1.2% coverage)	102 references (1.21% coverage)

Findings

Organizational Level

1) Engaging a diversity of stakeholders to match the educational goals of a country and to identify the needs of the community;

Teacher level

2) Increasing the awareness of environmental-friendly and competency-based concepts in lecture and assessment for influencing learners with environmental and economic impacts;

3) Bringing learners to the real world via industry exposure, practical projects with outputs to solve social problems; and

Learner Level

4) Identifying the role of learners in achieving individual learning outcomes and enhancing competency for life-long learning.

Findings

After reviewing literature on sustainable development mindset, sustainable development goals and corporate social responsibility (CSR), it has been found that:

1) **Individual attributes**– knowing and being;

2) **Perception of tasks**– inputs of continuous inspirations on sustainability, value creation with design thinking and system thinking; and

3) **Processes of integrated sustainable issues** affecting the outputs of breadth of outcomes on product innovation related to sustainable development.

Example –
ISO 9001 QMS Measurement Clause and
ISO 26000 CSR Dimension on Community Involvement

Human development and training in the workplace

Employment creation and skills development

Decision-making processes and structures

Discrimination and vulnerable groups

Fundamental principles and rights at work

Employment and employment relationships

Percentage of operations with implemented local community engagement, impact assessments, and development programmes

Summary

What are the major areas to fulfil quality indicators in higher education in relation to sustainable development?

Based on N'Vivo results in table 2, the major areas for improvement in quality assurance system in higher education from the perspective of sustainable development are:

- Competency-based assessment;
- Environmental-friendly concepts; and
- Respecting human rights.

Summary

2) What are the target areas for improvement in education for sustainable development?

Based on the results from content analysis of relevant documents in quality assurance, "Target Areas for Improvement" on the left hand side of the "House of Quality" summarize the following actions at different levels:

System at Organizational Level

Document the system for governance, competency with respect for the environment and human rights.

Management Responsibility at Organizational Level

Align the institutional mission with management responsibility, in governance structure and policy related to campus, programme, staff and students, e.g. competency-based assessment/ environmental-friendly concepts in campus management and programme development.

Summary

2) What are the target areas for improvement in education for sustainable development?

Resources at Organizational Level

Deploy relevant resources for competency-based assessment with environmental-friendly issues, staff and student issues.

Product Realization at Teacher / Learner Level

Ensure achievement of quality indicators with improvements in areas identified in the process of delivering the programmes to learners, e.g. competency-based assessment, environmental-friendly issues, staff and student issues.

Measurement at Organizational, Teacher/ Student Level

Measure the performance of quality indicators systematically with quality tools for measuring individual learning outcomes for community development.

Model of Sustainable Curriculum

Quality of Sustainable Curriculum

Collaborate with industries and government to build a platform for curriculum modification and character building of teachers and learners with

System thinking, Design Thinking, ISO, CSR, QF

and

transversal skills

of language skill/ cultural awareness/ socialization skill and digital skills for economic, social and environmental impacts

Model of Sustainable Curriculum

Quality of Learners

- Realize own weaknesses (handling paperwork, facing strangers and handling challenges) in 4Cs and 5Es

- Be aware global and local changes in economy, society and environment

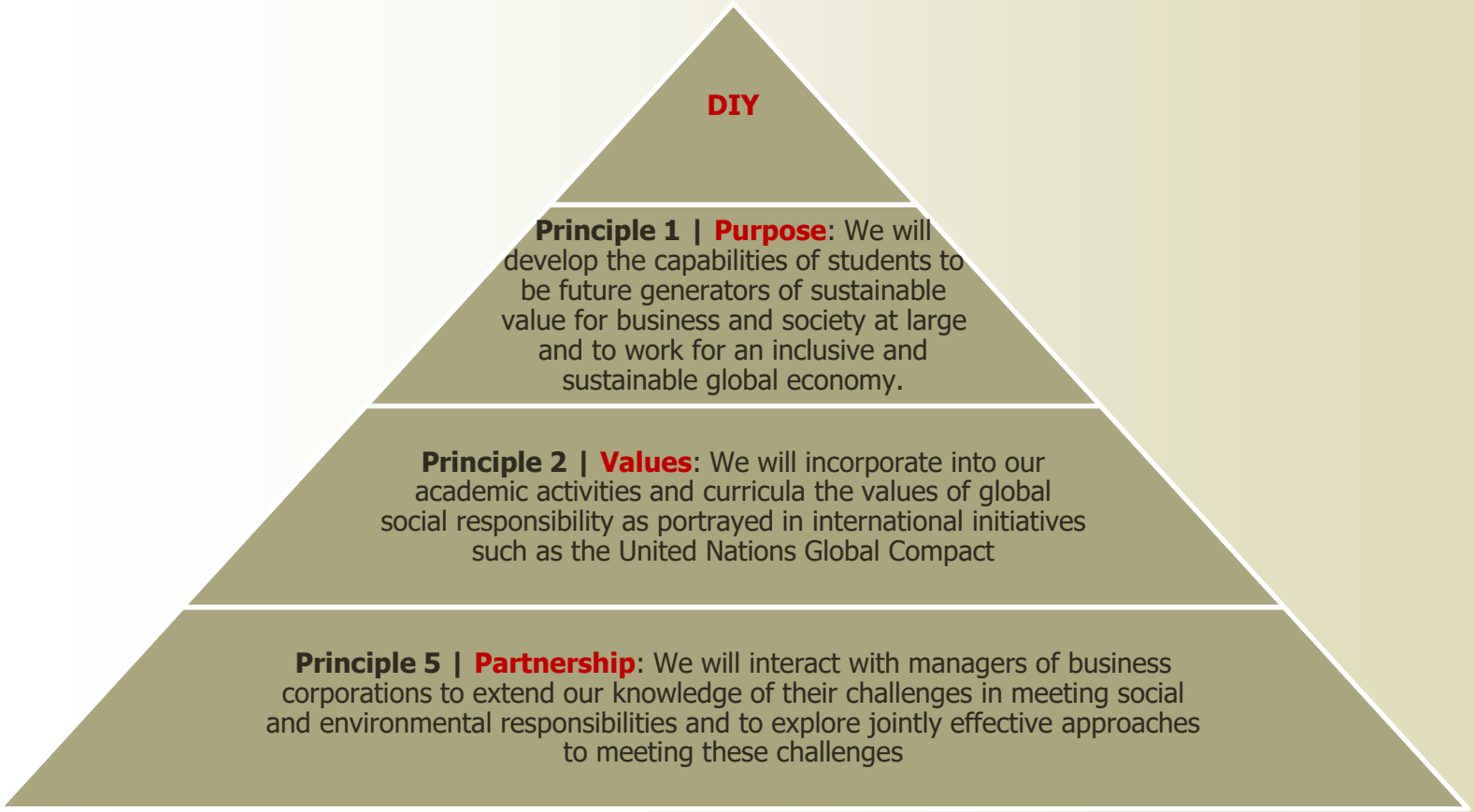
- Remain open-minded in creating new ideas for solving new problems for the community

Model of Sustainable Curriculum

Quality of Educators

- Use Design Thinking to develop creativity, social responsibility and implementation skills for learners
- Able to implement relevant pedagogies and assessments with contextualization for learners
- Offer opportunities for learners to experience and growth

Future of Disruptive Quality Indicators related to SD with Responsibility



Disrupt Tradition – Building a Path for Sustainability

System thinking/ Design Thinking for Sustainable Development Mindset

Best Practice

Free video shooting
training has been provided to students

Our students enjoyed this practical intern-preneurship project with innovations

This is the link of 759 store video produced by BBA-Supply Chain Management Yr 3 students.

https://www.youtube.com/watch?v=QAtFnHnlkK4

Q&A