The Pedagogical Model of Philippine STEAM Education

Inputs towards the Reengineering of Philippine STEAM Learning Ecosystem

The education sector has to cope with the shifting contour of the global economic landscape. Because industries are highly technology-driven, and humans are at the brink of being replaced by machines, new set of skills are required from the human workforce. Higher education institutions (HEIs) need to nurture graduates who demonstrate skills that machines are not capable of. Because most innovations emerge from Science, Technology, Engineering, Agri-Fisheries, and Mathematics (STEAM) disciplines, STEAM education needs to be reinvented. This policy brief proposes a framework to reengineer the Philippine STEAM learning ecosystem, inspired by the recently developed Philippine Pedagogical Model of STEAM Education.

At a glance

The Pedagogical Model of Philippine STEAM Education (PMPSE) exemplifies an archaic paradigm on STEAM learning. Driven by the changing global economic landscape, a framework towards reengineering the Philippine STEAM learning is proposed. The proposed framework features a STEAM learning architecture that is anchored primarily on industry needs and global trends.

HIGHLIGHTS

Philippine Higher Education Institutions must:
1. focus on identifying the key work competencies that satisfy the current and anticipate the emerging and future requirements of the labor market;
2. explore a more fluid and multidisciplinary infrastructure of talents and expertise such as telecommuting and outsourced professorial arrangement; and
3. embrace non-conventional learning modalities;
4. accelerate reskilling and upskilling of STEAM faculty and staff;
5. embrace the emergence of Internet of Things;
6. update its digital infrastructure.

STEAM educators in Philippine HEIs must:
1. engage in transdisciplinary research projects;
2. ensure borderless application of STEAM;
3. expose learners to transdisciplinary problems;
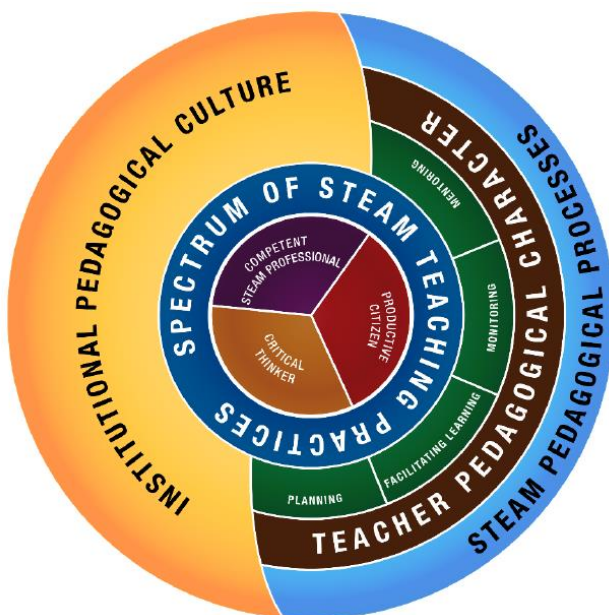4. ensure development of relevant skills among learners.

Figure 1. The Pedagogical Model of Philippine STEAM Education

KEY MESSAGES

✔ The surplus of STEAM graduates and the number of unfilled STEAM jobs in the country clearly illustrate a mismatch between what the labor market demands and what the HEIs nurture and produce.

✔ The Pedagogical Model of Philippine STEAM education puts more premium on institutional and teacher intervention on STEAM learning and less on empowering learners to seek learning independently.

✔ The changing global economic landscape necessitates higher education institutions to rethink about higher education learning, especially in STEAM, in order to nurture and produce industry-relevant and competent graduates.

✔ Industries must be actively engaged in STEAM curricular planning especially in mapping out the emerging and future competency requirements of the labor market.

✔ HEIs must establish an effective and efficient STEAM learning architecture where relevant competencies are developed at conservative cost.

✔ Philippines must accelerate its effort to cope with the demands of the fourth industrial revolution.

POLICY RECOMMENDATIONS

Given the broad implications of STEAM education, it is prudent to establish a unit under the commission, whose primary function is to advance quality STEAM education in the country. Specifically, such unit shall enforce development of industry-driven competencies as elucidated in the framework. Further, such unit shall work to:

1. revise the Policies, Standards and Guidelines (PSGs) of STEAM programs based primarily on competencies mapped from intensive industry assessment and forecasting;

2. broaden the scope of credentialing and certification systems to include recognition of emerging reputation markers;

3. revise the accreditation criteria for HEIs to recognize the emerging learning modalities and learning infrastructures;

4. develop guidelines on industry and community intervention in curricular planning, review, and evaluation; and

5. provide assistance to HEIs for reskilling and upskilling of STEAM faculty and staff.
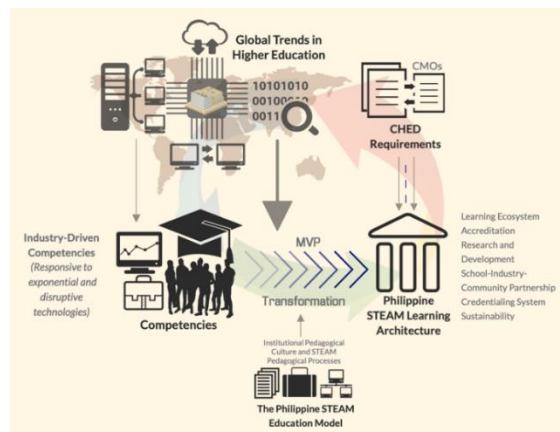

Figure 2. Framework to reengineer the Philippine STEAM Learning Ecosystem

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