



PHILIPPINE STEAM EDUCATION IN FOCUS POLICY BRIEFING

Research and Analysis from
TPACK in Philippine STEAM Education Program



The Philippine STEAM Education (PSE) Models

(Responsive Model and Emerging Model for Philippine STEAM Education)

Country-wide initiatives targeting FIRE (Fourth Industrial Revolution era) can be observed in all agencies and sectors of the government. The Department of Science and Technology (in partnerships with many other agencies) programs for accelerated human resource has already reaped a 19 rank improvement (from 73rd to 54th) in the Global Innovation Index (GII) 2019. The education sector also exemplify such efforts by proliferating the concept of Education 4.0 as a means towards FIRE. In fact, the Commission on Higher Education puts STEAM (Science, Technology, Engineering, Agri-fisheries, and Mathematics) at the forefront to this effort. Thus, this brief reports a substantive attempt to model the Philippine STEAM education to bridge content, pedagogy and technological gap in attaining the envisioned model for Philippine STEAM towards STEAM 4.0.

At a glance

Model analysis (Philippine Pedagogical, Technology Integration, and Assessment Models), and three-tier model validation generated two Philippine STEAM Education Models (responsive and emerging models). All inputs to the individual models were sourced from triangulated data (survey, interviews and FGDs, and Classroom Observations) from representative HEIs (SUCs Levels 1 & 2, LUCs, and private institutions) drawn from country-wide sampling.

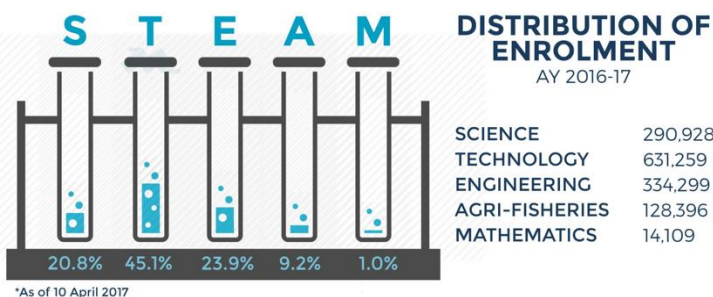


Figure 1. STEAM enrolment (source: PHCHED.gov)

“Out of the 3,589,484 tertiary enrollment in the year 2017, only 35.9% chose STEAM. About 20% completion rate in State Universities and Colleges, and an average of 21.9% completion rate for STEAM.”

HIGHLIGHTS

The first attempt in the country to model the current state of tertiary education in STEAM

The study highlights the initial efforts to improve STEAM teacher quality and STEAM education in the country to attune the paradigms of Education 4.0, and be able to join the IR 4.0 bandwagon.

It features unique results from which to source more information on how STEAM teacher quality and STEAM Education may be improved for STEAM Education 4.0.

KEY MESSAGES

✓ The proposed two models (responsive and emerging) of tertiary STEAM education in the country capture the current status (responsive model) and a forecast (emerging model) of the envisioned STEAM education in the fourth industrial revolution era (FIRe).

✓ Modelled Philippine STEAM Education (responsive) spells out four major variables that characterize the system of STEAM education in the country: outcomes (envisioned STEAM professionals), drivers (main considerations of STEAM education), institutional support (capability and resources), and processes (mechanisms, progression and STEAM education practices).

✓ The envisioned model (emerging) identified the core outcomes as STEAM professionals who are innovative and productive citizens, and 21st century-skilled individuals, and an accommodation of innovation in the aspect of institutional support.

POLICY RECOMMENDATIONS

1. For the Commission on Higher Education (CHED) to initiate programs, and ways and means to curricular reform using the models as source information in calibrating all STEAM programs.

2. Spearheading the enactment of executive orders to provide SUCs and even LUCs with funds to finance innovations.

3. For CHED to form a Technical Working Group/Committee to initiate development of indicators and instruments (assessment tools, curricular maps, and machine learning systems and platforms) from the model for purposes of monitoring and evaluation of STEAM programs.

4. Design micro-credentialing system or highly structured capacity building programs for Philippine STEAM Education to upskill and re-skill STEAM teachers and learners to transition to Education 4.0.

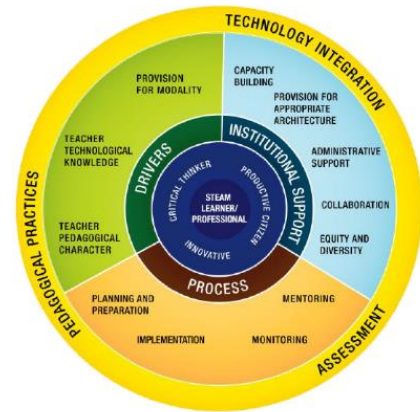


Figure 2. The Philippine STEAM Education (PSE) Model (Validated)

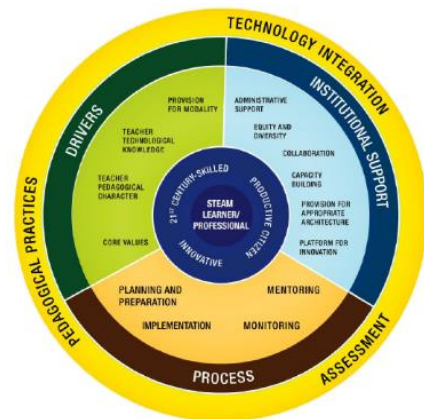


Figure 3. The Philippine STEAM Education (PSE) Model (Emerging)

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