CHED-PNU
TPACK
STEAM EDUCATION

The Realities of Assessment in Philippine Higher STEAM Education

Empowering the human capital for Industrial Revolution 4.0 entails the development of the attributes and qualities of STEAM (Science, Technology, Engineering, Agri-fisheries, & Mathematics)-skilled professionals (NEDA, 2017), through fostering successful STEAM education (STEAM Ed). The Commission on Higher Education (CHED) clearly articulates the value of STEAM Ed in the national curriculum, thus ensuring its presence in the planning of curriculum instruction and requiring quality assessment practices, which could promote student learning and confirm students' progress and achievement in the teaching-learning discourse. In this regard, this brief account the findings of a state-funded research in terms of assessment in STEAM Ed, grounded on the practices and experiences of STEAM educators in the higher education.
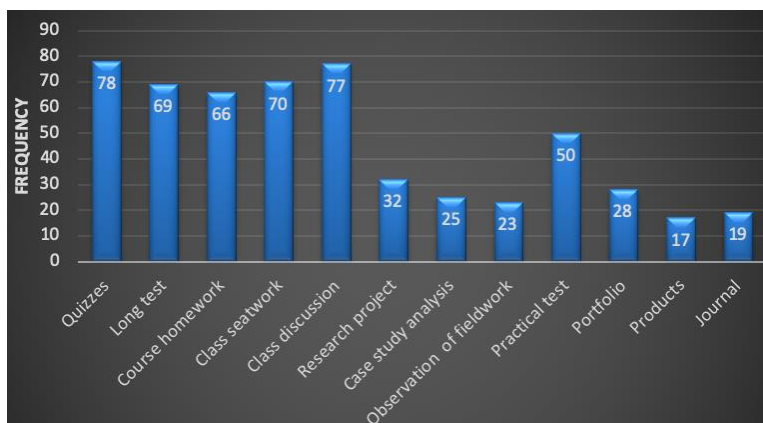

Figure 1. Assessment tool utilization of STEAM teacher participants. Data was gathered through a Classroom Observation Protocol for STEAM educators answered by 106 respondents nationwide.

"STEAM educators tend to utilize more traditional forms of assessment rather than those that are more authentic."

At a glance

The assessment practices of higher STEAM educators revolve into three themes: (1) assessment for career/industry readiness, (2) mounting assessment to support instruction, and (3) collaborative and reflective assessment process. These practices are modelled as a cyclical process with equity and diversity, collaboration, and modality as drivers; and powered by sustainability and institutional affordances.

HIGHLIGHTS

1. Higher STEAM educators tend to utilize more traditional assessment forms than more authentic ones, because:

   a. many pattern assessments in the licensure examination given by the Professional Regulations Commission (PRC), which is paper-and-pencil in nature;
   b. they lack appropriate training in implementing other types of assessment; and
   c. the resources and technology available/provided are scarce.

2. The industry plays a major role in assessing STEAM students, especially during practicum.

3. The STEAM assessment model represents four prominent variables that plays a significant role in ensuring quality assessment in STEAM Ed.

KEY MESSAGES

✔ The STEAM assessment model provides various STEAM education stakeholders with a structured conceptual blueprint involved in the practices of STEAM educators in executing assessment along with the details of the different factors that influence its implementation.

✔ The STEAM assessment model may serve as guide to different educational stakeholders in grasping the many aspects of assessment in STEAM.

✔ Industry partners are also lead players in the STEAM assessment.

✔ The PRC and other licensing body influence the forms of assessment given by STEAM educators.

✔ The quality of STEAM assessment implemented is affected by institutional affordances and sustainability exercises of their respective agencies.

✔ STEAM teachers consider three major outcomes in planning assessment, these are STEAM students who are: (1) productive citizens, (2) critical thinkers, and (3) innovative professional learners.

POLICY RECOMMENDATIONS

1. The CHED should create a governing body that at the national level, will define a vision, a strategy, and a plan, using the STEAM assessment model, that would harmonize, institutionalize, and monitor STEAM assessment practices in the country.

2. HEIs should allocate a budget that could promote, assist, and sustain STEAM teachers access to updated and relevant resources, technology, training, and information that could potentially improve assessment literacy, practices, and efficiency.

3. HEIs should encourage and support teachers' communities of practice in developing and sharing innovative assessment practices, through monetary and promotional incentives.

4. The CHED should craft a memorandum order that mandates all HEIs to develop a standardize guidelines that could properly direct industry partners in assessing STEAM students and establish their role in STEAM Ed.

5. The PRC and other licensing body should regularly update the landscape of the assessment process they implement to match the demands of the changes in education and in the industry by developing and implementing a research-based quality standards framework in professional assessment.
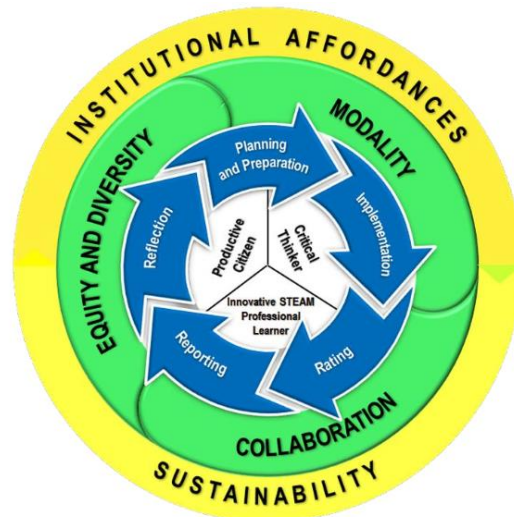

Figure 2. Higher STEAM Education Assessment Model

REFERENCES:

National Economic and Development Authority (NEDA). (2017). Philippine Development Plan 2017-2022.

Sarmiento, C.P., Morales, M.P.E., Elipane, L.E., and Palomar, B.C. (2019). Assessing Learning in Philippine Higher STEAM Education. Preprint. Preprint

Morales, M.P.E., Anito, J.C., Jr., Avilla, R.A., Sarmiento, C.P., Palisoc, C.P., Elipane, L.E., Ayuste, T.O.D., Butron, B.R., and Palomar, B.C. (2019). The Philippine STEAM Education Model. Manila, Philippines: Philippine Normal University, ISBN: 978-971-568-048-8

Morales, M.P.E., Anito, J.C., Abulon, E.R., Jr., Avilla, R.A., Palisoc, C.P., and Casilla, N.A. (2018). TPACK in Philippine STEAM Education: STEAM Educators Proficiency Indicators. Manila, Philippines: Philippine Normal University, ISBN: 978-971-568-046-2

PROJECT TEAM

Principal Investigator
Marie Paz E. Morales, Ph.D.

Co-Investigator
Ruel A. Avilla

Lead Researcher
Celina P. Sarmiento

Lead Researcher-Collaborator, Jose Rizal University
Jovito C. Anito Jr.

Researchers
Thaddeus Owen D. Ayuste   Benilda R. Butron
Levi E. Elipane   Brando C. Palomar
Caesar P. Palisoc

Consultants
Ma. Antoinette C. Montealegre, D.A.
Rosemarievic C. Diaz, Ph.D.

Staff
Nica A. Casilla   Ma. Luz V. Rantael
Sienna Joy C. Galit   Patricia Mae C. Purificacion

For further information, please contact:
Dr. Marie Paz E. Morales (Principal Investigator)
Tel No.: (02) 5317-1768 local 530
Email: morales.mpe@pnu.edu.ph
URL: *https://www.facebook.com/MamPaz/*