

Using Logistic Regression to Evaluate SDG 4.7 Integration



Sustainability & Global Citizenship Education
in the Philippine Basic Education System

SDG 4 • Target 4.7 Alignment

What is SDG Target 4.7?

By 2030, ensure all learners acquire knowledge and skills to promote **sustainable development**, human rights, gender equality, global citizenship, and cultural diversity.

Key pillars include:

- Education for Sustainable Development (ESD)
- Global Citizenship Education (GCED)
- Climate change & environmental literacy
- Human rights & peace education

The Critical Gap



69% of grade 9 curricular globally contain no references to climate change

66% make no mention of sustainability

50% of teachers don't teach these topics even where curriculum covers them

Only **63%** of national teacher training plans include climate focus

The Philippine Context

Statistical evidence of the education crisis

91%

Learning Poverty Rate

Children aged 10 unable to read simple text

World Bank, 2022

75%+

Low PISA Performers

Filipino students below proficiency in math, science & reading (2022)

OECD / EDCOM 2, 2023

7%

Effective Teachers

Or fewer demonstrate highly effective classroom practices in the Philippines

World Bank, 2023

3.6%

GDP on Education

Below the recommended 4–6% benchmark; less than regional peers

PIDS / World Bank, 2022

Note: The Philippines ranked 77th out of 81 countries in PISA 2022, scoring 347 pts vs OECD average of 500 — with no significant improvement from 2018

Why This Research is Urgently Needed



Teacher Quality Crisis

40.1% of Philippine students report teachers often or sometimes absent — among the highest in East Asia. Only 7% or fewer teachers demonstrate effective practices. World Bank (2023) found training programs in the Philippines rarely focus on subject content (14%) vs. 81% in high-performing programs.

World Bank. Fixing the Foundations, 2023



SDG 4.7 Data Gap

The UNESCO SDG 4 Country Profile for the Philippines reports NO available data for Indicator 4.7.1 — the key measure of ESD and GCED integration in curricula, teacher education, and assessment. This data absence is itself evidence of the monitoring gap this study addresses.

UNESCO UIS SDG 4 Philippines Profile, 2024



The 2030 Teacher Window

Approximately 75% of teachers expected to be teaching in the Philippines by 2030 are already employed today. This means improving existing teachers' ESD competencies — not waiting for new cohorts — is the most scalable and urgent lever available to policymakers.

World Bank, 2023 (Philippines, China, Indonesia, Malaysia)

Research Question & Model Selection

Key Research Question

Can we predict whether a Philippine educational institution or national curriculum is "SDG 4.7 Compliant" or "Non-Compliant" based on measurable indicators such as curriculum content, teacher training, and policy support?

LOGISTIC REGRESSION MODEL SPECIFICATIONS



Model Type	Logistic Regression — binary classification
Outcome (Y)	SDG 4.7 Compliance: 1 = Compliant, 0 = Non-Compliant
Rationale	Dependent variable is categorical, not continuous — LR is the appropriate method
Output	Probability score per institution + odds ratios per predictor variable

Dataset Description & Variables

Independent Variables (X) — Predictors

- % of subjects with ESD content in curriculum
- % of teachers trained in sustainability / GCED
- Policy alignment index score (national SDG 4.7 frameworks)
- Number of sustainability programs/projects in schools
- Education budget allocation for ESD initiatives

Dependent Variable (Y)

SDG 4.7 Compliance Classification

1 = Compliant

0 = Non-Compliant

Data Sources



- DepEd Philippines — K–12 curriculum & teacher data
- CHED — Higher education program data
- UNESCO Global Education Monitoring (GEM) Reports
- World Bank Philippines education statistics

Expected Social Impact



Accountability

Provides a data-driven mechanism to verify whether Philippine institutions genuinely implement SDG 4.7 — not merely claim alignment. Replaces paper-based self-reporting with measurable, predictive indicators.

Addresses the missing Indicator 4.7.1 data for the Philippines (UNESCO UIS, 2024)



Decision Support

Policymakers, DepEd, and CHED can use the model to identify weak areas in curriculum and teacher readiness, prioritize ESD funding, and target reforms where they are most needed.

Particularly critical given 75%+ of Filipino students performing below PISA proficiency benchmarks



Scalability

The model can be extended across ASEAN member states, enabling benchmarking of SDG 4.7 implementation and positioning the Philippines within regional education performance comparisons.

Replicable in Indonesia, Malaysia, Vietnam, Thailand, and other ASEAN partners

Long-Term Vision & Philippine Relevance

Long-Term Impact

UNESCO emphasizes that education systems play a central role in achieving **ALL other Sustainable Development Goals**.

Without proper ESD integration, countries risk producing graduates who are unprepared to address:

Climate change and environmental crises

Systemic inequality and social exclusion

Sustainable development and human rights challenges

Philippine Relevance

In the Philippines, foundational learning gaps and weak ESD implementation compound each other — both must be addressed together.

The MATATAG curriculum reform — currently being rolled out by DepEd — includes teacher and learner training on climate science, providing an emerging institutional basis for the variables this model would operationalize (World Bank, 2024).

Bridging this gap ensures future graduates are not only literate but globally competent and sustainability-aware — essential for meeting the 2030 Agenda.

Bibliography



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Data-Driven Education for a Sustainable Philippines

Logistic Regression as a tool for SDG 4.7 compliance evaluation
in the Philippine basic and higher education system

SDG 4 · Quality Education

Target 4.7 · ESD & GCED

Philippine Education Reform