PEAC 2025 Philippine Education Conference

International Large-Scale Assessments and School Reform

What can private schools learn from ILSAs?

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Here for the future.

1

Philippine Development Plan 2017-2022

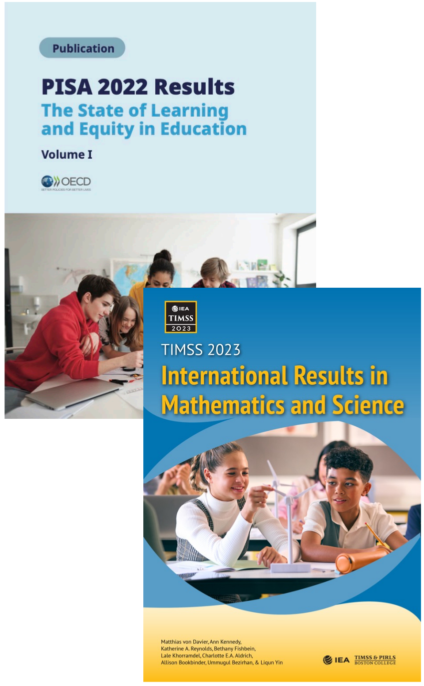
"Participate in international large-scale assessments (ILSAs). The country's participation in ILSAs such as the Trends in International Mathematics and Science Study, Programme for International Student Assessment, and South-East Asia Primary Learning Metrics will be prioritized to measure learning outcomes vis-à-vis other countries and provide information to evaluate the country's progress in improving math, science, and literacy and build evidence for policy development and decision-making."

NEDA (2020, p. 173), *Updated Philippine Development Plan (2017-2022)*

2

What ILSAs results say…

- **ILSAs assess a country's education system**
- ILSA results estimate the overall proficiency of target student population in a country in selected domains
  - Individual students' scores represent proficiency with reference to learning standards
  - Country scores combine individual student scores
  - Country scores are also be ranked in relation to other countries/territories



3

Country	Average Scale Score	
[3] Singapore	625 (3.9)	▲
† Hong Kong SAR	602 (3.3)	▲
Korea, Rep. of	600 (2.2)	▲
Chinese Taipei	599 (1.9)	▲
Japan	593 (1.8)	▲
[2] Russian Federation	567 (3.3)	▲
† Northern Ireland	566 (2.7)	▲
[2] England	556 (3.0)	▲
Ireland	548 (2.5)	▲
[2] Latvia	546 (2.6)	▲
† Norway (5)	543 (2.2)	▲
[2] Lithuania	542 (2.8)	▲
Austria	539 (2.0)	▲
≡ Netherlands	538 (2.2)	▲
[2] † United States	535 (2.5)	▲
Czech Republic	533 (2.5)	▲
† Belgium (Flemish)	532 (1.9)	▲
Cyprus	532 (2.9)	▲
Finland	532 (2.3)	▲
[2] Portugal	525 (2.6)	▲
† Denmark	525 (1.9)	▲
Hungary	523 (2.6)	▲
[2] Turkey (5)	523 (4.4)	▲
Sweden	521 (2.8)	▲
Germany	521 (2.3)	▲
Poland	520 (2.7)	▲
Australia	516 (2.8)	▲
Azerbaijan	515 (2.7)	▲
Bulgaria	515 (4.3)	▲
Italy	515 (2.4)	▲
[2] Kazakhstan	512 (2.5)	▲
[1 2] Canada	512 (1.9)	▲
[2] Slovak Republic	510 (3.5)	▲
Croatia	509 (2.2)	▲
Malta	509 (1.4)	▲
[2] Serbia	508 (3.2)	▲
Spain	502 (2.1)	
TIMSS Scale Centerpoint	**500**	
Armenia	498 (2.5)	
Albania	494 (3.4)	
[2] New Zealand	487 (2.6)	▽
France	485 (3.0)	▽
[1] Georgia	482 (3.7)	▽
United Arab Emirates	481 (1.7)	▽
Bahrain	480 (2.6)	▽
North Macedonia	472 (5.3)	▽
Montenegro	453 (2.0)	▽
Bosnia and Herzegovina	452 (2.4)	▽
Qatar	449 (3.4)	▽
[2] Kosovo	444 (3.0)	▽
Iran, Islamic Rep. of	443 (3.9)	▽
Chile	441 (2.7)	▽
Oman	431 (3.7)	▽
[2] Saudi Arabia	398 (3.6)	▽
Morocco	383 (4.3)	▽
Kuwait	383 (4.7)	▽
South Africa (5)	374 (3.6)	▽
[2] ψ Pakistan	328 (12.0)	▽
[2] ψ Philippines	297 (6.4)	▽

	Mean score in PIS A 2022		
	Mathematics	Reading	Science
	Mean	Mean	Mean
Bulgaria	417	404	421
Moldova	414	411	417
Qatar	414	419	432
Chile	412	448	444
Uruguay	409	430	435
Malaysia	409	388	416
Montenegro	406	405	403
Mexico	395	415	410
Thailand	394	379	409
Peru	391	408	408
Georgia	390	374	384
Saudi Arabia	389	383	390
North Macedonia	389	359	380
Costa Rica	385	415	411
Colombia	383	409	411
Brazil	379	410	403
Argentina	378	401	406
Jamaica*	377	410	403
Albania	368	358	376
Indonesia	366	359	383
Morocco	365	339	365
Uzbekistan	364	336	355
Jordan	361	342	375
Panama*	357	392	388
Philippines	355	347	356
Guatemala	344	374	373
El Salvador	343	365	373
Dominican Republic	339	351	360
Paraguay	338	373	368
Cambodia	336	329	347

What ILSAs results say

- Media and popular discussions have tended to focus on low rank compared to other countries
- Moving up in the ranks does not mean students are learning better

4

What ILSAs results say…

- Focus on scores and attainment of proficiency standards/benchmarks
  - TIMSS 2019 : Philippines

Benchmark	Mathematics	Science
Advanced	0%	0%
High	1%	1%
Intermediate	6%	5%
Low	19%	13%

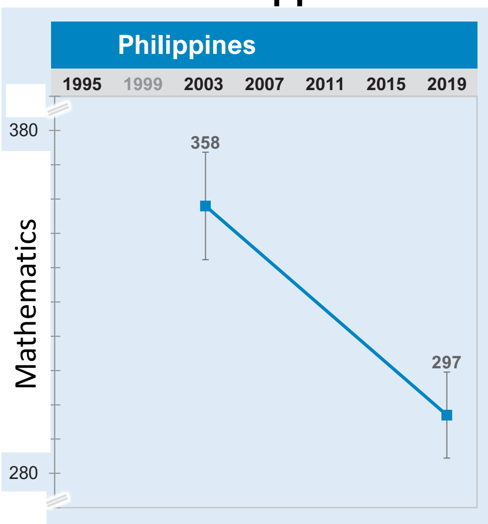
  - PISA 2022 : Philippines

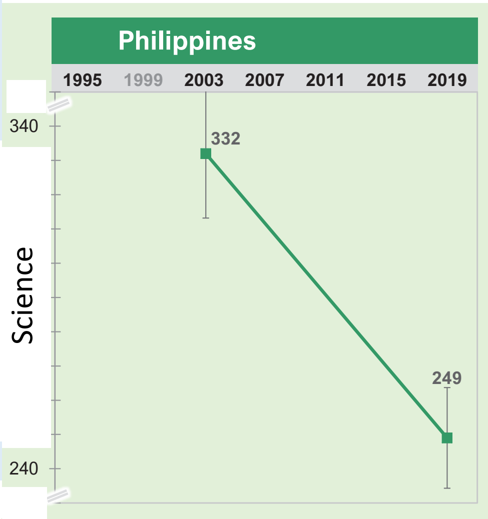
Standard	Mathematics	Science	Reading
Level 5 or 6	< 1%	< 1%	< 1%
Level 2 (minimum)	16%	23%	24%

5

What ILSAs results say…

- TIMSS 2019 : Philippines





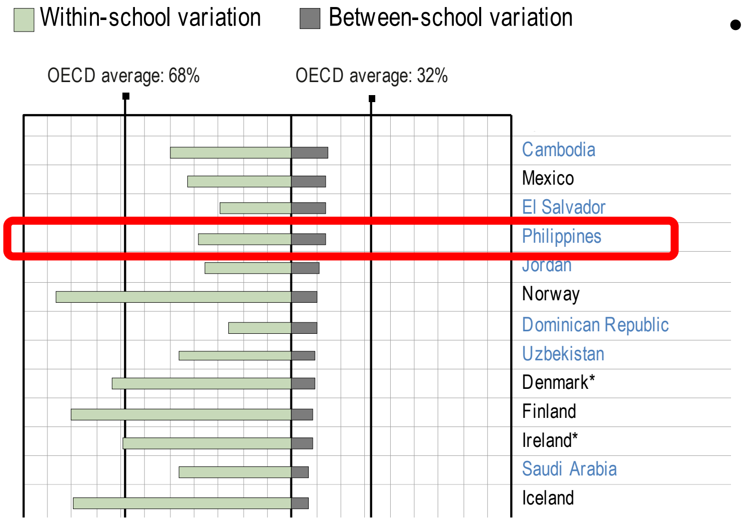
6

What ILSAs results say…

- Remember: ILSAs assess a country's education system
- ILSAs do NOT say anything about the **students' intelligence or innate abilities**
  - Scores represent what students were able to learn in their schools (in the country)

7

What ILSAs results say about Philippine schools…



- There is not much variations within Philippine schools

  There is also not much variation among (or across) Philippine schools

  Relatively speaking, all our schools are performing badly

8

What about private schools?

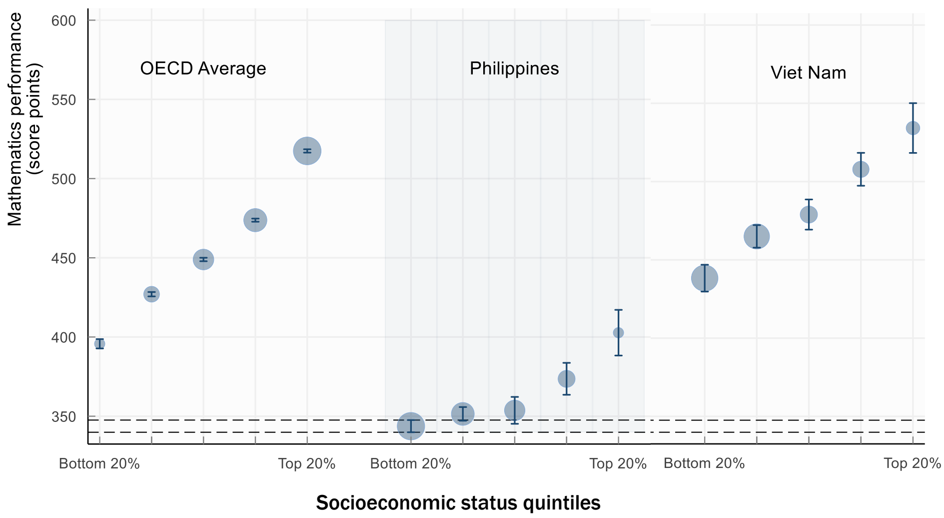
TABLE 2-B
PERFORMANCE BY SCHOOL TYPE IN PISA 2018-2022

School Type	2018	2022	2018-2022 (+-)	2022 Difference (Pub vs Prv)
Mathematics				
Public	344	345	1	59 ↑ (Private)
Private	392	404	11	
Science				
Public	348	344	-4	73 ↑ (Private)
Private	397	417	21	
Reading				
Public	329	333	3	83 ↑ (Private)
Private	388	416	29	

Source: OECD PISA 2018 and 2022

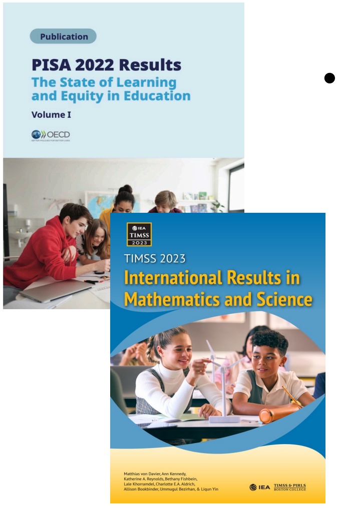
9

Low proficiency amid inequity in Philippine education



10

How can ILSAs inform school reform?

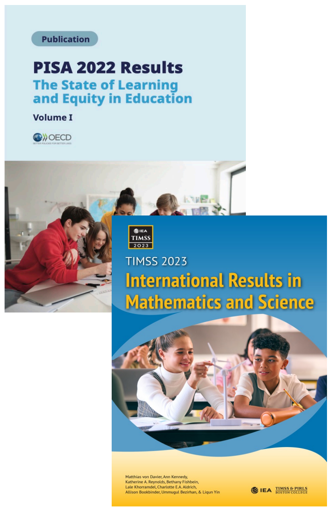


- Remember: ILSAs assess school systems, NOT individual schools
- But ILSAs provide so much information and insights:
  - Detailed frameworks for characterizing competencies in different learning domains
  - Assessment frameworks for these domains
  - Student experiences
  - Student beliefs, attitudes, and perceptions
  - Home environment
  - School and classroom environment

11

How can ILSAs inform school reform?

- We need to think beyond the low ranks
- We need to understand the factors the that predict the low scores
- Need: careful research
  - Generally, Philippine educators are not really good at this (Sorry 😭)
  - But a few groups have done some systematic research on ILSAs (PIDS, DLSU, AIM, ADMU)

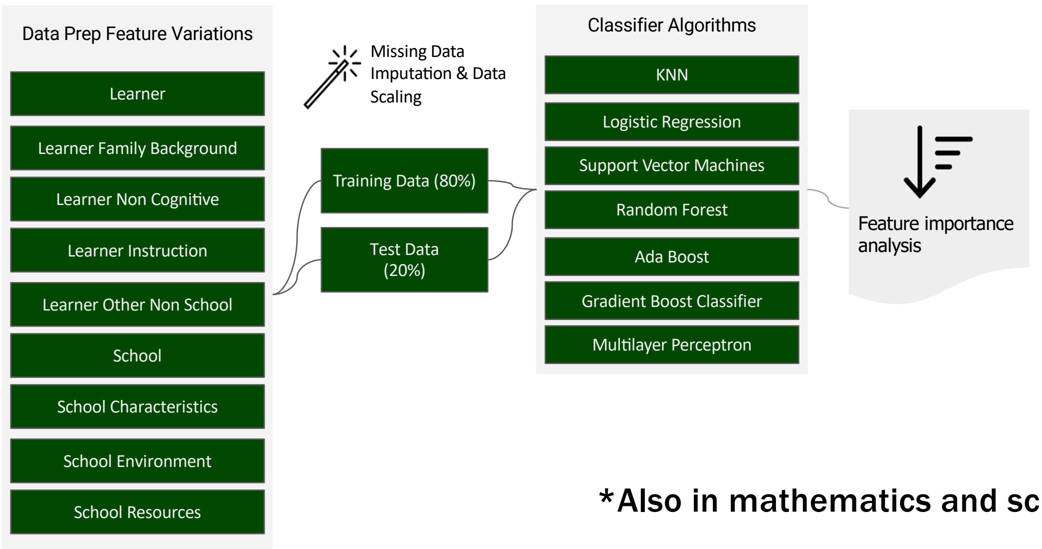


12

A few examples of what can be learned from more careful study of ILSAs

13

Predicting of poor proficiency in reading in PISA using machine learning approaches



*Also in mathematics and science

14


Humanities & Social Sciences Communications

ARTICLE

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Check for updates

Profiling low-proficiency science students in the Philippines using machine learning

Allan B. I. Bernardo[1✉], Macario O. Cordel II[1], Marissa Ortiz Calleja[1], Jude Michael M. Teves[1], Sashmir A. Yap[1] & Unisse C. Chua[1]

Filipino students' performance in global assessments of science literacy has always been low, and this was confirmed again in the PISA 2018, where Filipino learners' average science literacy scores ranked second to last among 78 countries. In this study, machine learning approaches were used to analyze PISA data from the student questionnaire to test models that best identify the poorest-performing Filipino students. The goal was to explore factors that could help identify the students who are vulnerable to very low achievement in science and that could indicate possible targets for reform in science education in the Philippines. The random forest classifier model was found to be the most accurate and more precise, and Shapley Additive Explanations indicated 15 variables that were most important in identifying the low-proficiency science students. The variables related to metacognitive awareness of reading strategies, social experiences in school, aspirations and pride about achievements, and family/home factors, include parents' characteristics and access to ICT with internet connections. The results of the factors highlight the importance of considering personal and contextual factors beyond the typical instructional and curricular factors that are the foci of science education reform in the Philippines, and some implications for programs and policies for science education reform are suggested.

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15

READING VARIABLES
- Negative reading self-concept
- Low metacognitive awareness of reading strategies
- Low enjoyment of reading
- Low reading of fiction for enjoyment

TEACHING VARIABLES
- Frequent teacher feedback
- Asking students their thoughts on the reading material
- Low teacher enthusiasm

ICT VARIABLES
- Low ICT resources at home
- Infrequent use of ICT to learn about a topic
- Infrequent use of ICT to chat
- Frequent use of ICT for reading emails

MOTIVATIONAL VARIABLES
- Low persistence in mastering tasks
- Low mastery learning goals
- Low valueing for schooling
- Low expected occupational status after high school
- Low growth mindset beliefs

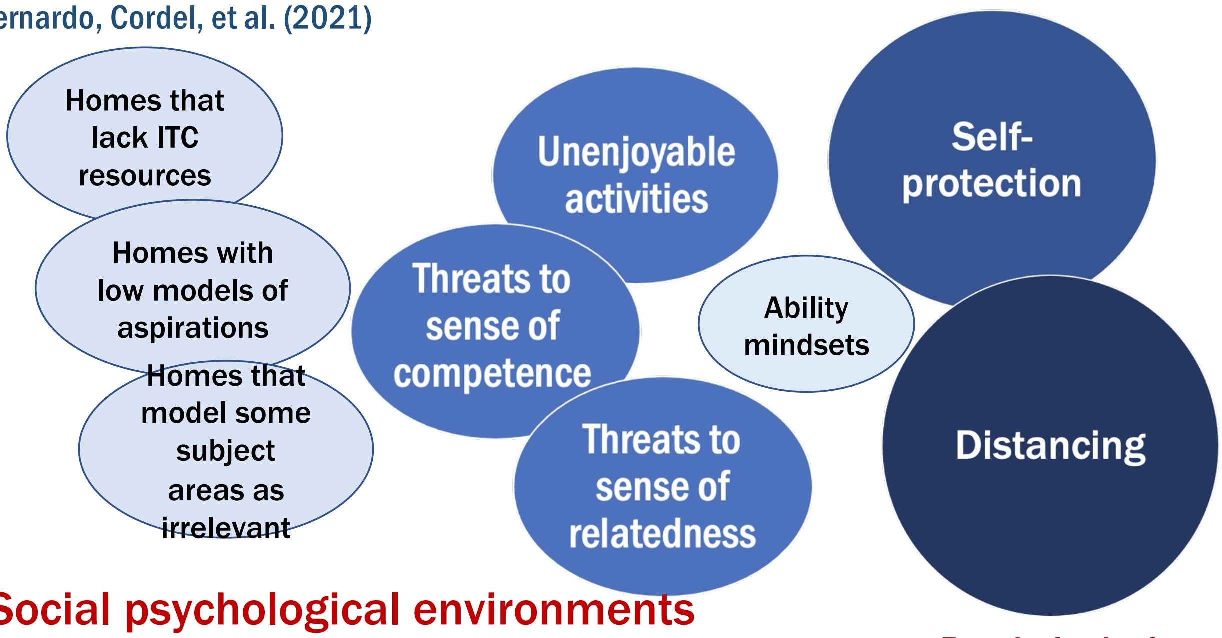
SCHOOL ENVIRONMENT VARIABLES
- High exposure to bullying
- Low sense of belonging
- Low perceived cooperation among students

Low Economic, Social, and Cultural (ESC) Status of family

Bernardo, Cordel, et al. (2021)

16

Bernardo, Cordel, et al. (2021)



Social psychological environments of low-achieving Filipino students

Psychological responses

17

Needs-supportive teaching and student reading proficiency in PISA

- Learners basic needs : autonomy, competence, relatedness
- Autonomy supportive teaching: offer explanatory rationale, take the students' perspective, and welcome students' ideas to determine their learning.
- Competence supportive teaching: providing structure such as setting clear expectations, giving constructive feedback, adjusting teaching strategies, and offering instrumental help.
- Relatedness supportive teaching: investing their time on students by showing affection, understanding, and enjoyment in interacting with students

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Need supportive teaching is associated with greater reading achievement: What the Philippines can learn from PISA 2018

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ABSTRACT

The Philippines participated for the first time in the Programme for International Student Assessment (PISA) in 2018. PISA 2018 focused on reading proficiency and Filipino students ranked lowest in the world. We examined whether need supportive teaching would be associated with student reading achievement using 2018 Philippine data ($n = 7233$). We further tested if the association is generalizable across school types and socioeconomic strata. Results revealed that need supportive teaching positively predicted student reading achievement across different types of school and socioeconomic contexts. Results suggest the potential importance of enhancing need supportive teaching as an evidence-based approach to improve students' reading achievement. This empirical insight shows how reforms that improve teaching and learning present more significant promise in increasing reading achievement.

1. Introduction

Participation in international large-scale assessments has increased over the past three decades especially among developing countries (Ganimian & Murnane, 2016; Tobin, Nugroho, & Lietz, 2016). This increased participation goes hand in hand with the demand for evidence-based educational policy and decision making. One of the most important international assessments is the Programme for International Student Assessment (PISA). For the first time, the Philippines participated in PISA 2018, and this provided the Philippines' Department of Education (DepEd) baseline data on the country's quality of education. The Philippines scored lowest in reading, and second to the lowest in science and math among 79 participating countries. The dismal performance prompted the Philippine government to roll out policies to address "the urgency of improving the quality of basic education in the Philippines" (Department of Education, 2019, p. viii).

The Philippine government has crafted proposals targeted at the system level (e.g., curriculum reform) and focused on resource allocation (increasing funding for teacher pay and building infrastructure). The current policy proposals entail financial investments from limited government economic resources. However, studies have shown that the impact of system-level and resource allocation

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18

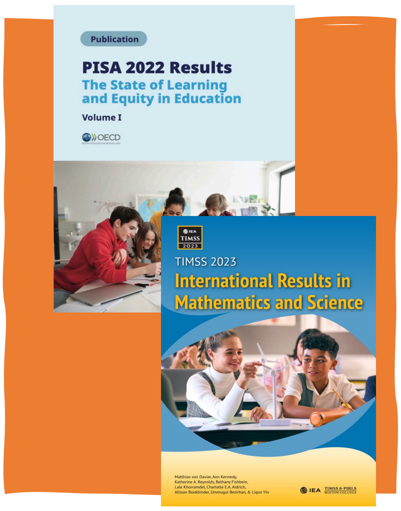
Haw, King, & Trinidad (2021)

Needs-supportive teaching

- positively predicted Filipino students' reading achievement
  - both public and private schools
  - both urban and rural schools
  - in different socioeconomic community contexts

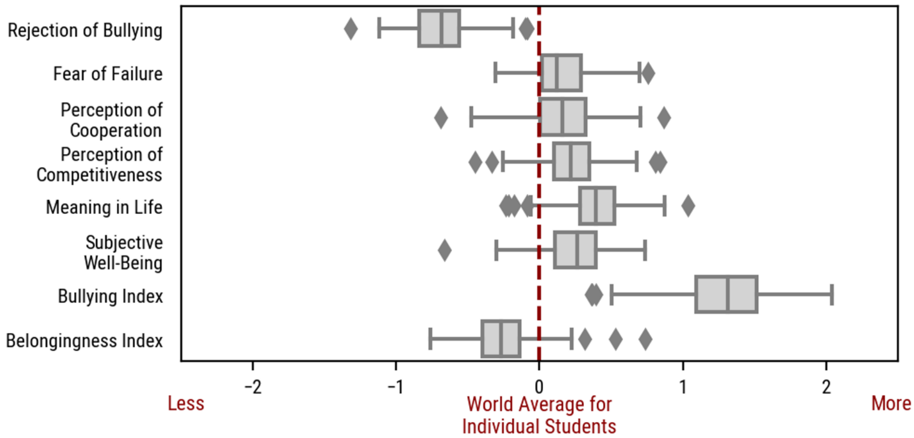
19

ILSAs and Filipino students well-being



20

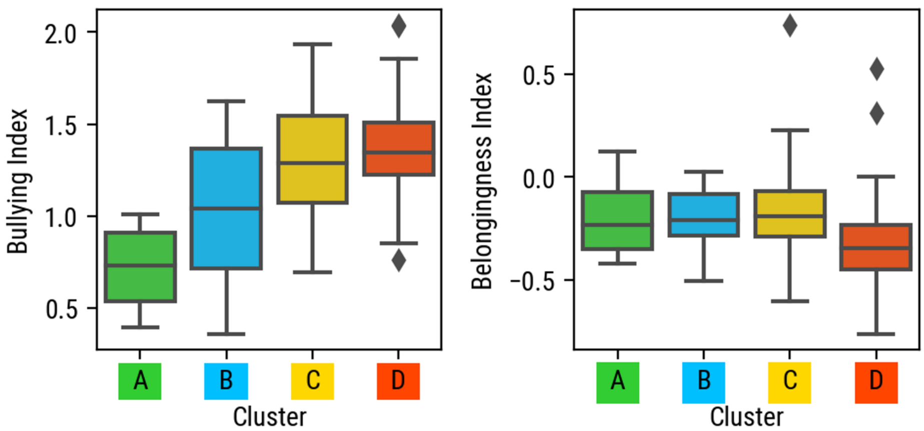
Machine learning cluster analysis of school environments



21

Tiam-Lee et al. (2024)

Clustering Results



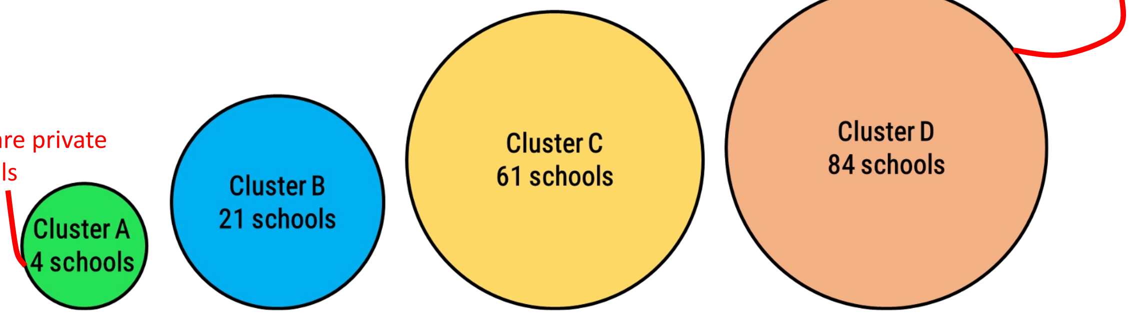
23

Tiam-Lee et al. (2024)

Clustering Results

All 4 are private schools

More than half of participating public schools are here.



Lowest level of bullying among cluster

Relatively low bullying, but more variable

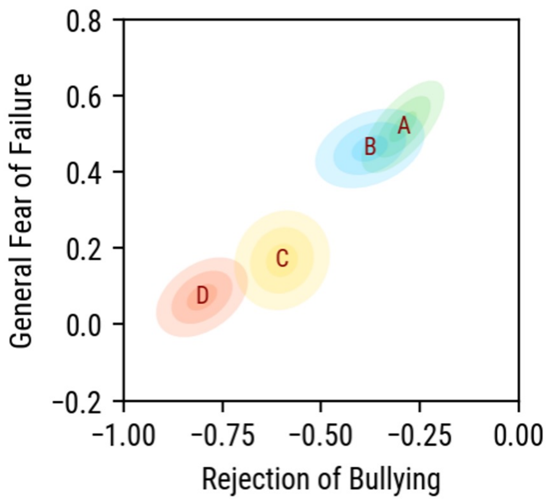
Relatively high bullying

Relatively high bullying + lowest level of belongingness

24

Tiam-Lee et al. (2024)

Environment Profiles of Each Cluster



Clusters A and B:

high rejection of bullying

high fear of failure

Clusters C and D:

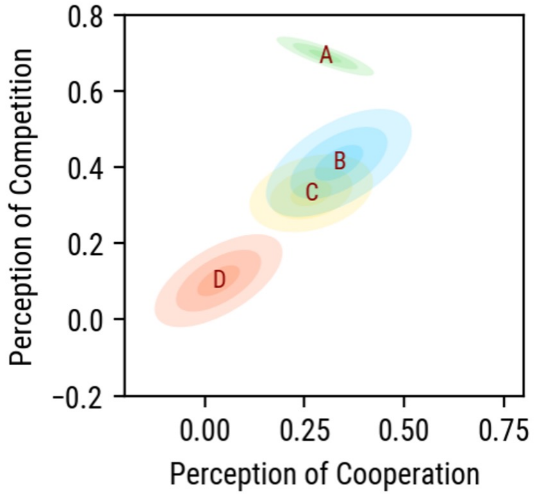
low rejection of bullying

low fear of failure

25

Tiam-Lee et al. (2024)

Environment Profiles of Each Cluster



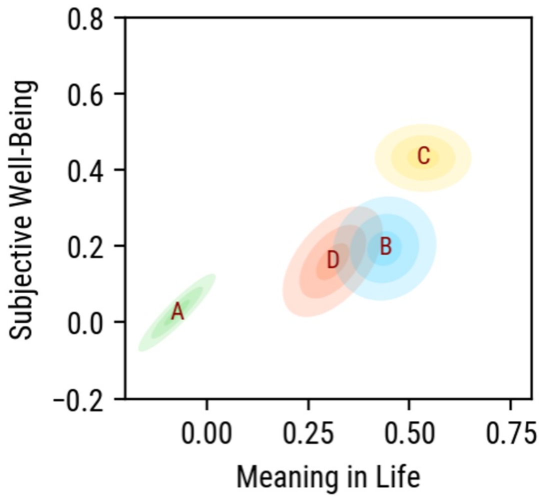
Clusters A, B, and C have similar perception of cooperation, but **Cluster A** has a **significantly higher perception of competition**.

Cluster D has a **significantly lower perception of cooperation** and **significantly lower perception of competition**.

26

Tiam-Lee et al. (2024)

Environment Profiles of Each Cluster



Clusters C:

High subjective well-being

High meaning in life

Cluster A:

Surprisingly low meaning in life

27

Tiam-Lee et al. (2024)

- Less-bullied clusters A and B are similar.
  - High rejection of bullying, high fear of failure
  - Main difference: A has significantly less meaning in life, high sense of competition
- More bullied clusters C and D are similar:
  - Low rejection of bullying, low fear of failure
  - Main difference: C has high subjective well-being, while D has low sense of competition, low sense of cooperation, and low sense of belonging.

28

Other Philippine research on ILSAs

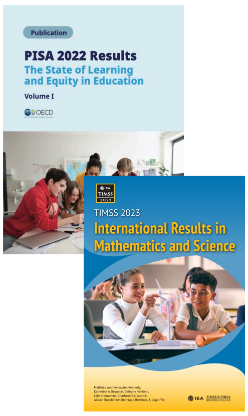
- Growth mindset and academic proficiency
- Metacognitive strategies for reading
- Science literacy and students' pro-environmental attitudes
- Global citizenship competencies

29

Asian and global research on ILSAs

- Effects of using formative assessment systems on student achievement
- Implications of ability-based groupings for achievement
- Financial models for schools
- Tracking policy changes on achievement (longitudinal analysis)
- Cultural level beliefs and achievement

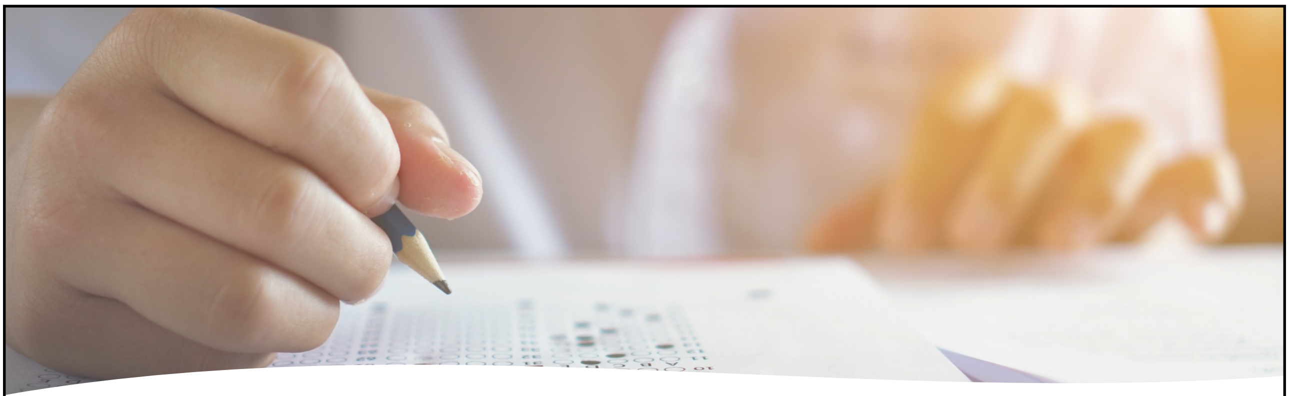
30



Summary

- Describe what we know from recent ILSAs (PISA and TIMSS)
- Clarify what information and insights can and cannot be derived from ILSAs
- Clarify how school reform can be guided by ILSA-based research
- Provide some examples of ILSA-based research in the Philippines

31



Concluding points

- Large scale assessment data can enrich knowledge about student learning in our schools
- But we cannot just look at ranks and scores
- We need to analyze the data more thoughtfully to extract insights relevant for our schools practices and reforms
- Hope: PEAC and education reformers provide more support for research on Philippine ILSA data

32

PEAC 2025 Philippine Education Conference
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THANK YOU VERY MUCH FOR LISTENING!!!

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33