

ENVIRONMENTAL KNOWLEDGE AND WILLINGNESS TO ACT PRO- ENVIRONMENTALLY.

A COMPARATIVE PERSPECTIVE USING IEA TIMSS 2019 AND ICCS 2016 DATA

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OVERVIEW



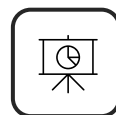
ABOUT THE BOOK



CONCEPTUAL FRAMING



RESEARCH QUESTIONS



SELECTED RESULTS

Variations in environmental knowledge and willingness to act



SELECTED RESULTS

Disparities Within Countries



SELECTED RESULTS

Implementation of ESD Opportunities

The background of the slide is a photograph of several books resting on wooden shelves. The image is covered with a semi-transparent blue overlay, which softens the details of the books and shelves. The books are of various thicknesses and are arranged in a slightly overlapping manner, creating a sense of depth and texture.

ABOUT THE BOOK

NEW BOOK

New Book!

IEA Research for Education Series

Editors:

Maria Magdalena Isac

Andres Sandoval-Hernandez

Wanda Sass

IEA Research for Education 16

A Series of In-depth Analyses Based on Data of the International Association for the Evaluation of Educational Achievement (IEA)



Maria Magdalena Isac
Andrés Sandoval-Hernández
Wanda Sass *Editors*

Knowledge and Willingness to Act Pro-Environmentally

Perspectives from IEA TIMSS 2019 and
ICCS 2016 Data



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AIMS OF THE BOOK

- To investigate the extent to which education for sustainable development learning outcomes, such as environmental knowledge and willingness to act pro-environmentally, are achieved and fostered in various educational systems.
- To highlight the value of international large-scale assessments such as TIMSS and ICCS in understanding key ESD learning outcomes and processes.

BOOK CONTENTS

Chapter 1: Knowledge and Willingness to Act Pro-environmentally. Perspectives from IEA TIMSS 2019 and ICCS 2016 Data – An Introduction

Chapter 2: Theoretical Approaches: Operationalizing Action Competence as a Learning Outcome of Education for Sustainable Development Using International Large-Scale Assessments

TIMSS 2019

Chapter 3: Operationalization and Methodology in TIMSS

Chapter 4: Environmental Knowledge: Conceptualization and Measurement

Chapter 5: Inequalities on Environmental Knowledge

Chapter 6: School Practices and Environmental Knowledge

ICCS 2016

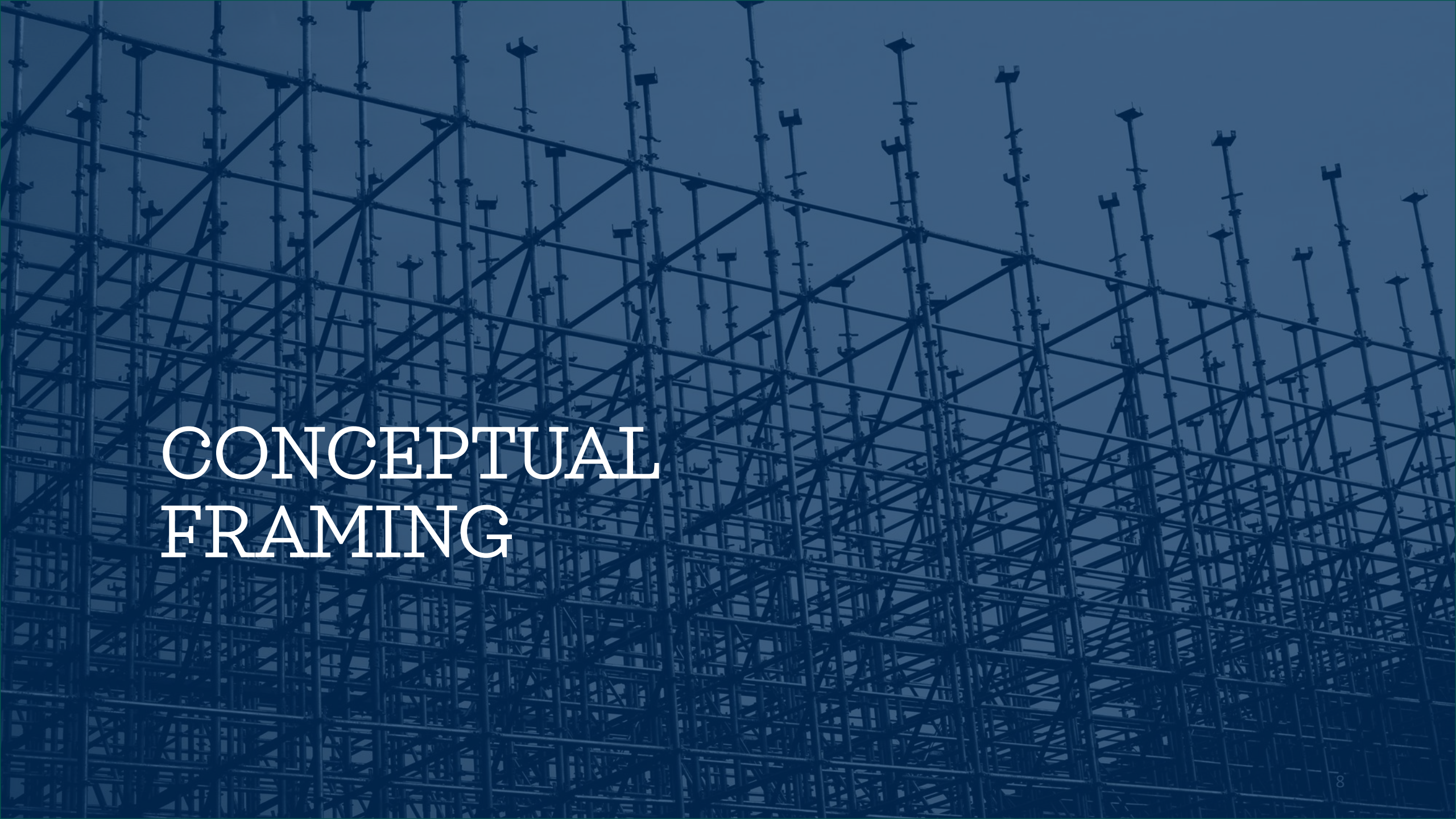
Chapter 7: Operationalization and Methodology in ICCS

Chapter 8: Willingness to Act Pro-environmentally. Conceptualization and Country Comparisons.

Chapter 9: Inequalities on Willingness to Act Pro-environmentally.

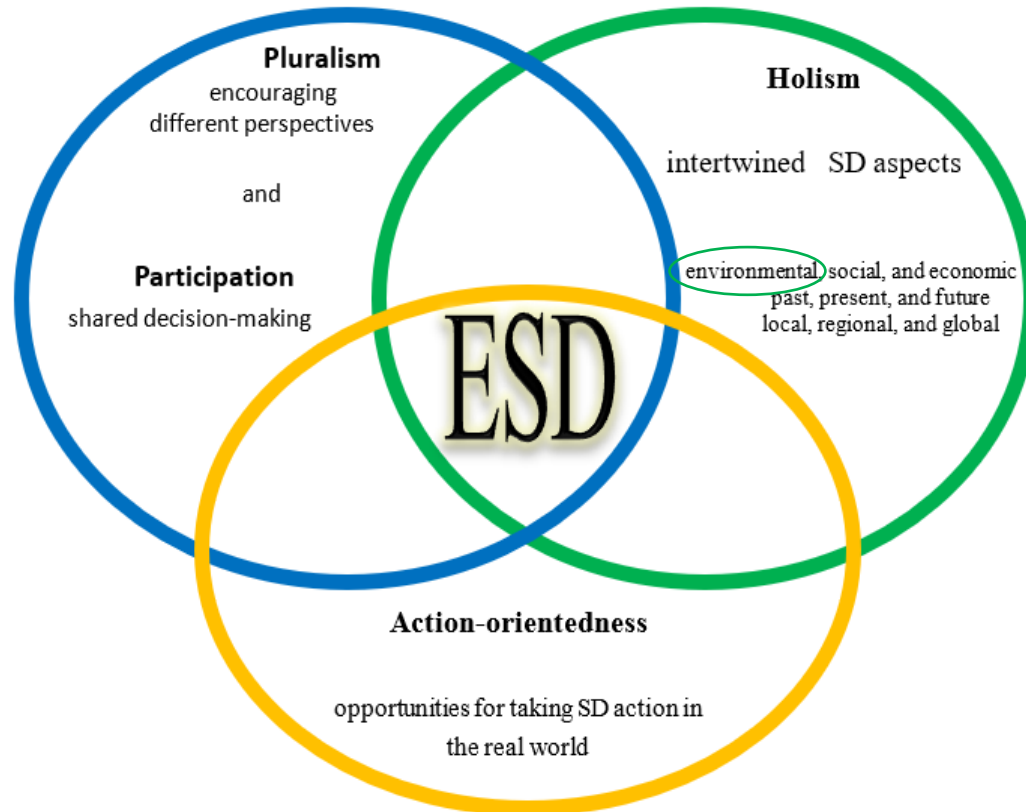
Chapter 10: School Factors And Students' Willingness to Act Pro-environmentally

Chapter 11: Environmental Knowledge and Willingness to Act Pro-Environmentally – Final Remarks



CONCEPTUAL FRAMING

CONCEPTUAL FRAMING



Education for Sustainable Development



Action Competence in Sustainable Development



RESEARCH QUESTIONS

RESEARCH QUESTIONS

- To what extent are there variations in environmental knowledge and willingness to act pro-environmentally across different countries?
- To what extent do disparities among students within countries, associated with various background characteristics, relate to learning outcomes?
- To what extent are specific educational opportunities for learning about sustainable development issues implemented in lower-secondary schools, and how do these opportunities relate to young people's learning outcomes?

A photograph of a forest with many thin tree trunks, overlaid with a semi-transparent blue filter. The text is positioned on the left side of the image.

SELECTED RESULTS

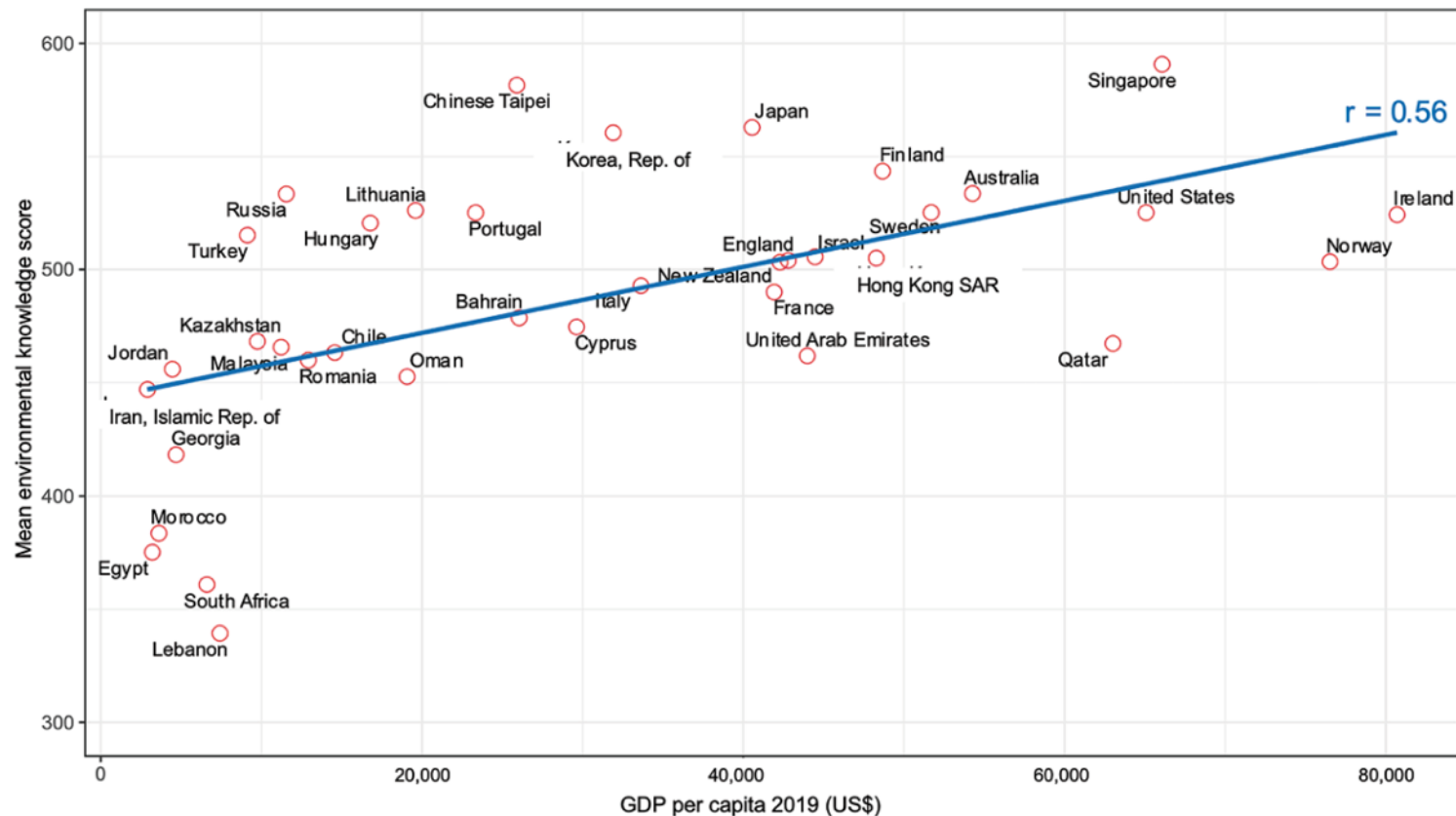
Variations in Environmental Knowledge and Willingness to Act

SELECTED RESULTS:

Variations in environmental knowledge and willingness to act

TIMSS 2019 Findings:

- Significant differences across countries (e.g., top countries >550 points, bottom <400 points)
- Higher scores seem to be related to higher GDP

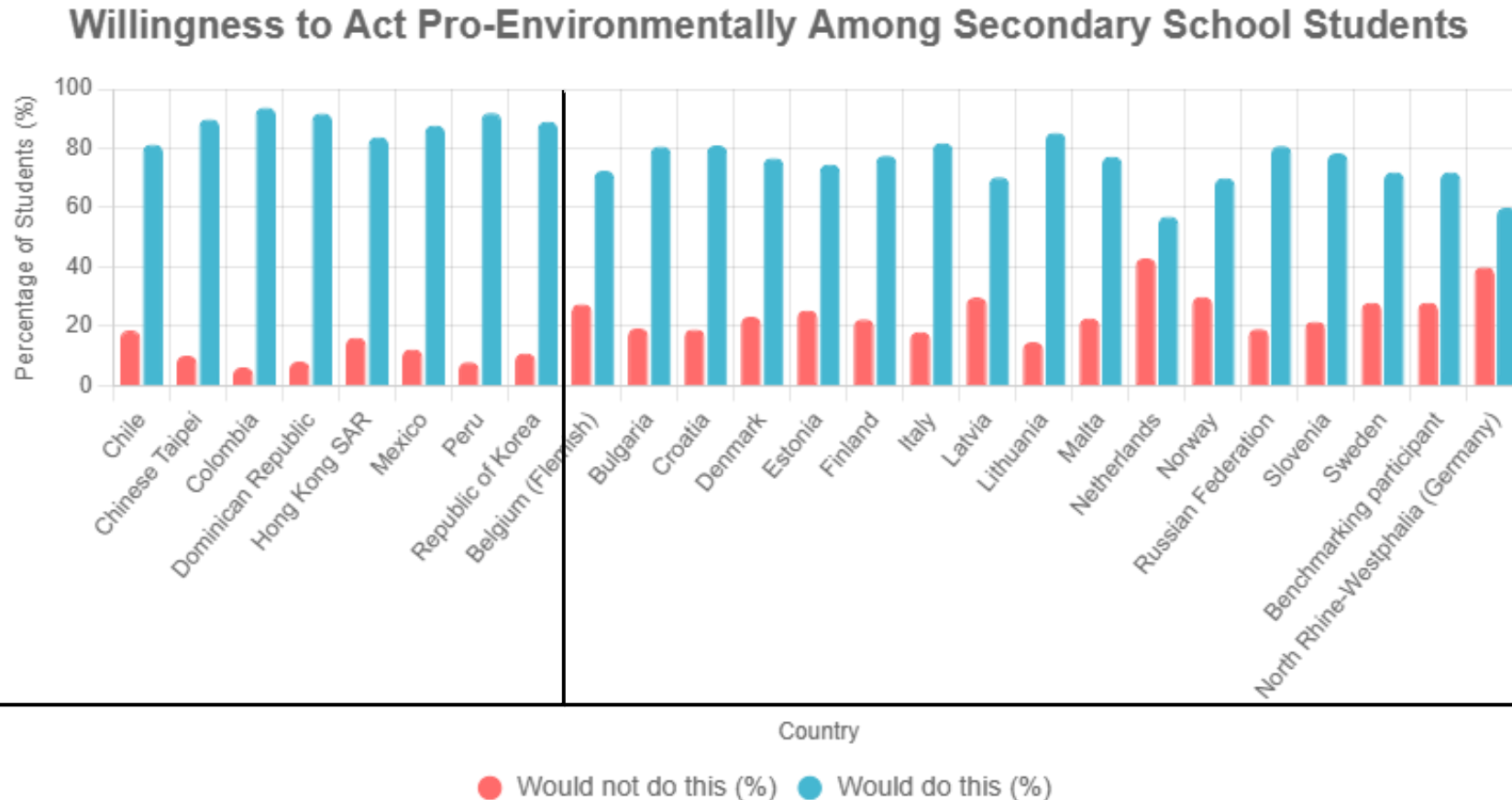


SELECTED RESULTS:

Variations in environmental knowledge and willingness to act

ICCS 2016 Findings:

- 70% of students globally are willing to act pro-environmentally
- Higher willingness in Asian and Latin American countries, lower in some European countries



Asian + Latin
American
countries ~80%

European
countries ~70%

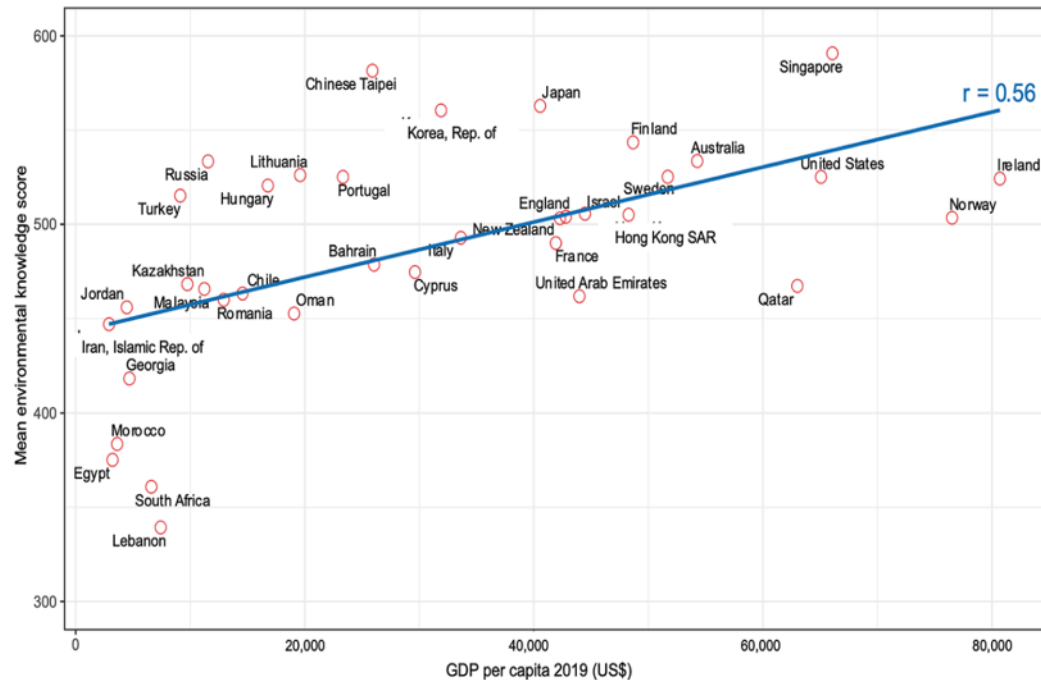
SELECTED RESULTS:

Variations in environmental knowledge and willingness to act

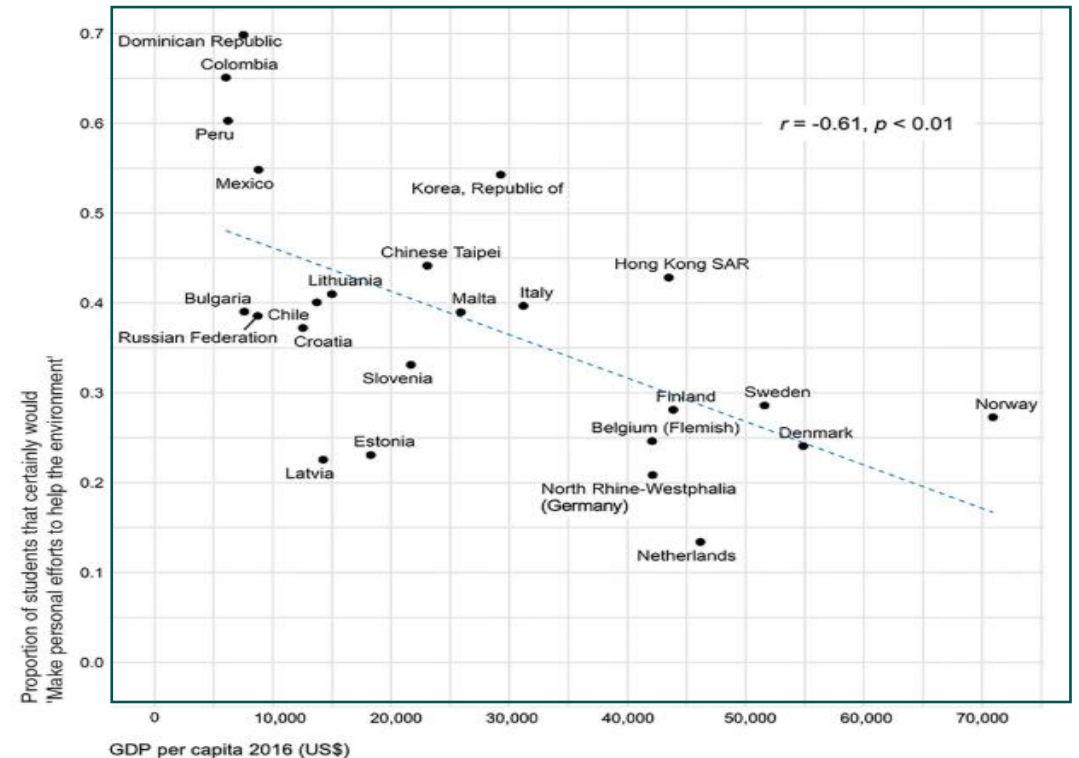
Crossed trends:

- Environmental knowledge varies by country's geographical region and economic development (Global North, higher scores).
- Willingness to act also varies by geographical region and economic development (Global South, higher willingness to act).

Environmental knowledge



Willingness to act





SELECTED RESULTS

Disparities between countries

SELECTED RESULTS:

Disparities Within Countries



Socioeconomic Status:

Knowledge: Strong association between environmental knowledge and socioeconomic status.

Willingness to Act: Higher willingness to act among students from more educated families.



Gender Differences:

Knowledge: Mixed patterns, often small or non-existent gaps.

Willingness to Act: Female students generally display higher willingness.

Other Factors:



Geography: Students in urban schools outperform their rural peers in environmental knowledge.



Immigration background: Lower willingness to act among students with immigrant background.



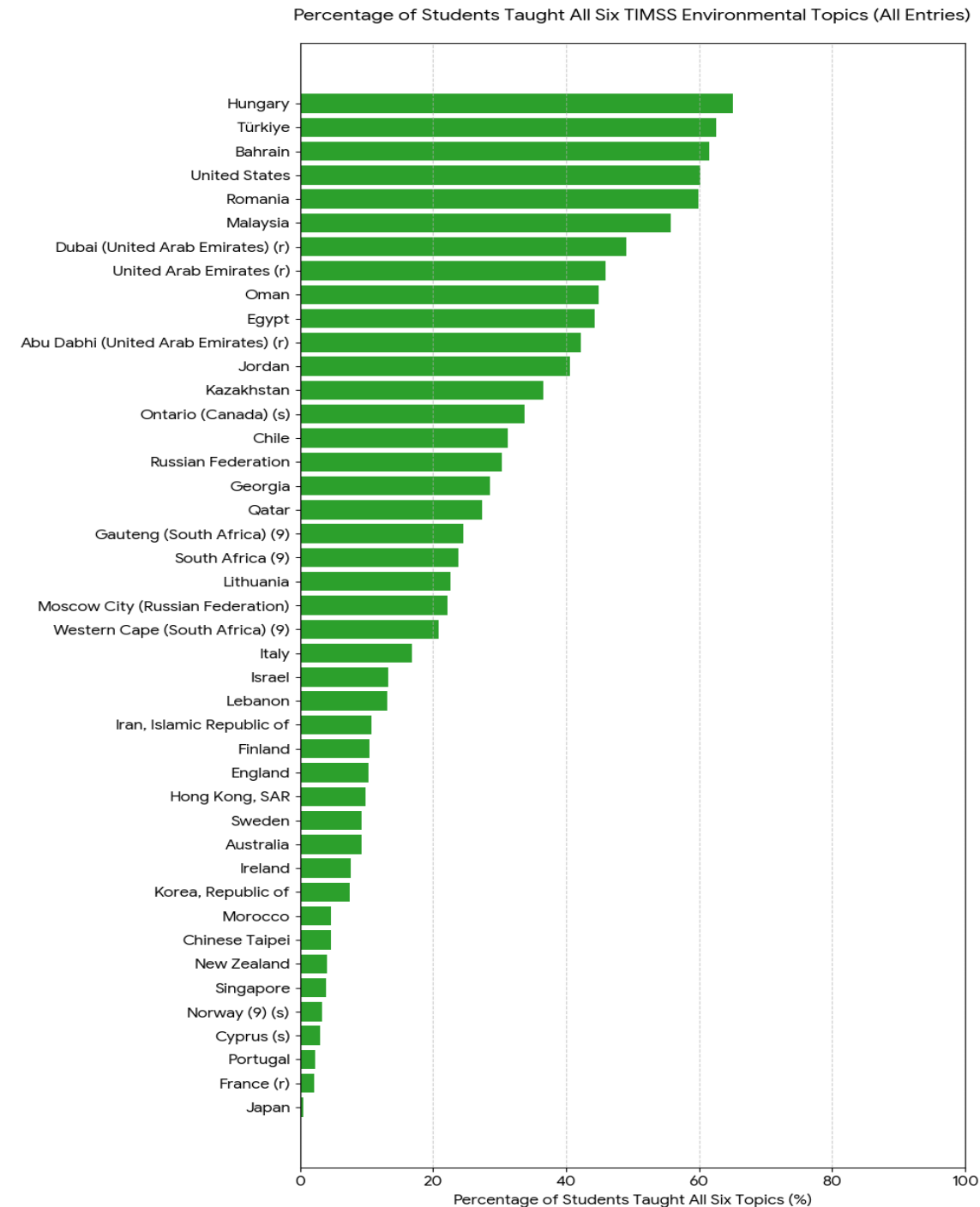
SELECTED RESULTS

Implementation of ESD Opportunities

SELECTED RESULTS:

Implementation of ESD Opportunities

- **Curriculum Alignment:** Reveals a widespread misalignment between intended and implemented ESD curricula across countries. Actual coverage is often lower than expected.



SELECTED RESULTS:

Implementation of ESD Opportunities

- **Teaching Practices:** Emphasis on beneficial practices like science investigation, pluralistic, and action-oriented approaches is less widespread than anticipated.

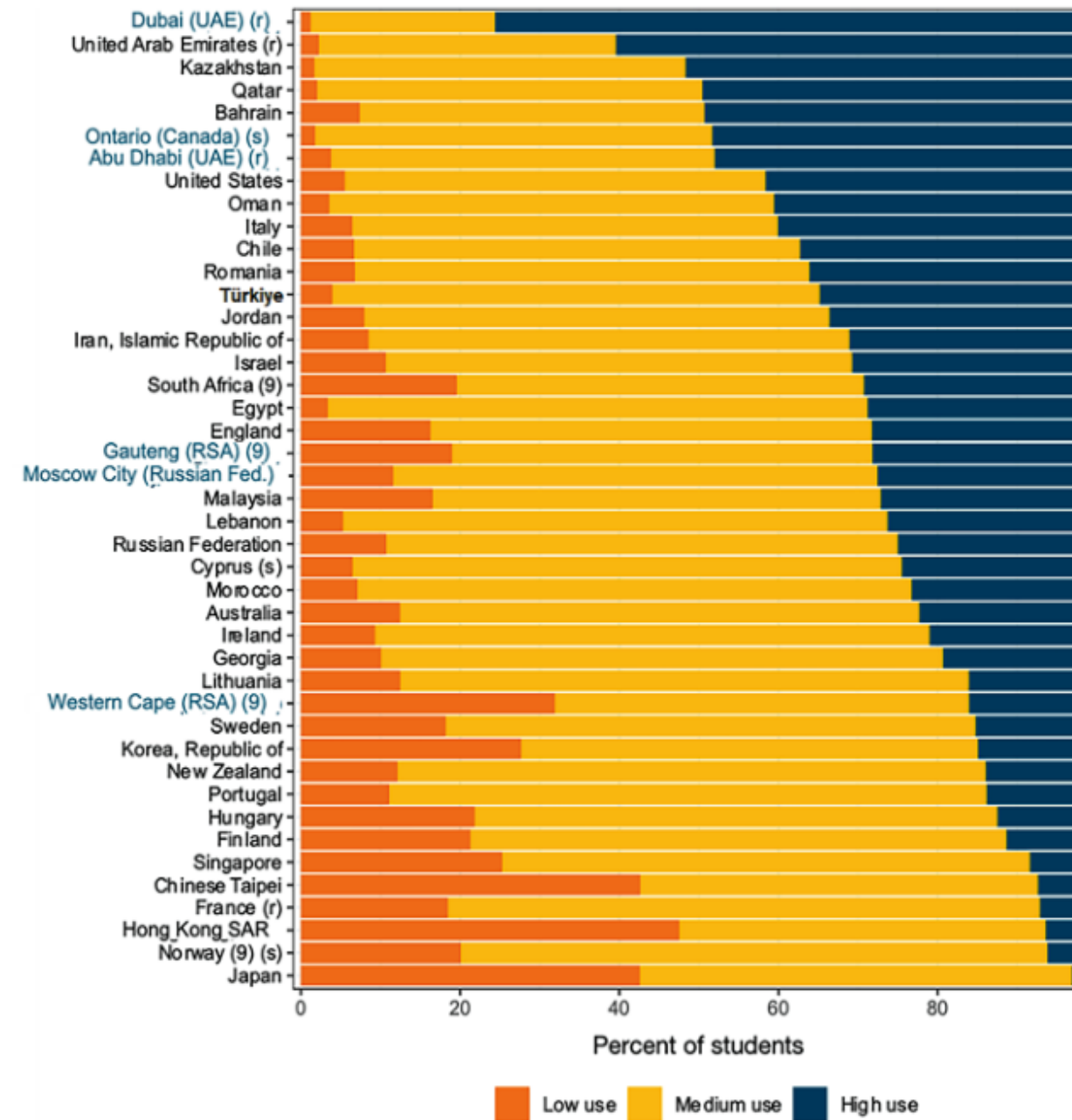


Fig. 6.1 Teachers' emphasis on pluralistic and action-oriented classroom practices (percent of students with teachers in the presented categories)

SELECTED RESULTS:

Implementation of ESD Opportunities

- **Student-Reported Opportunities:** Students' willingness to act is more strongly associated with *their own reported* learning opportunities (e.g., substantial chances to learn about environmental protection, open classroom discussions).

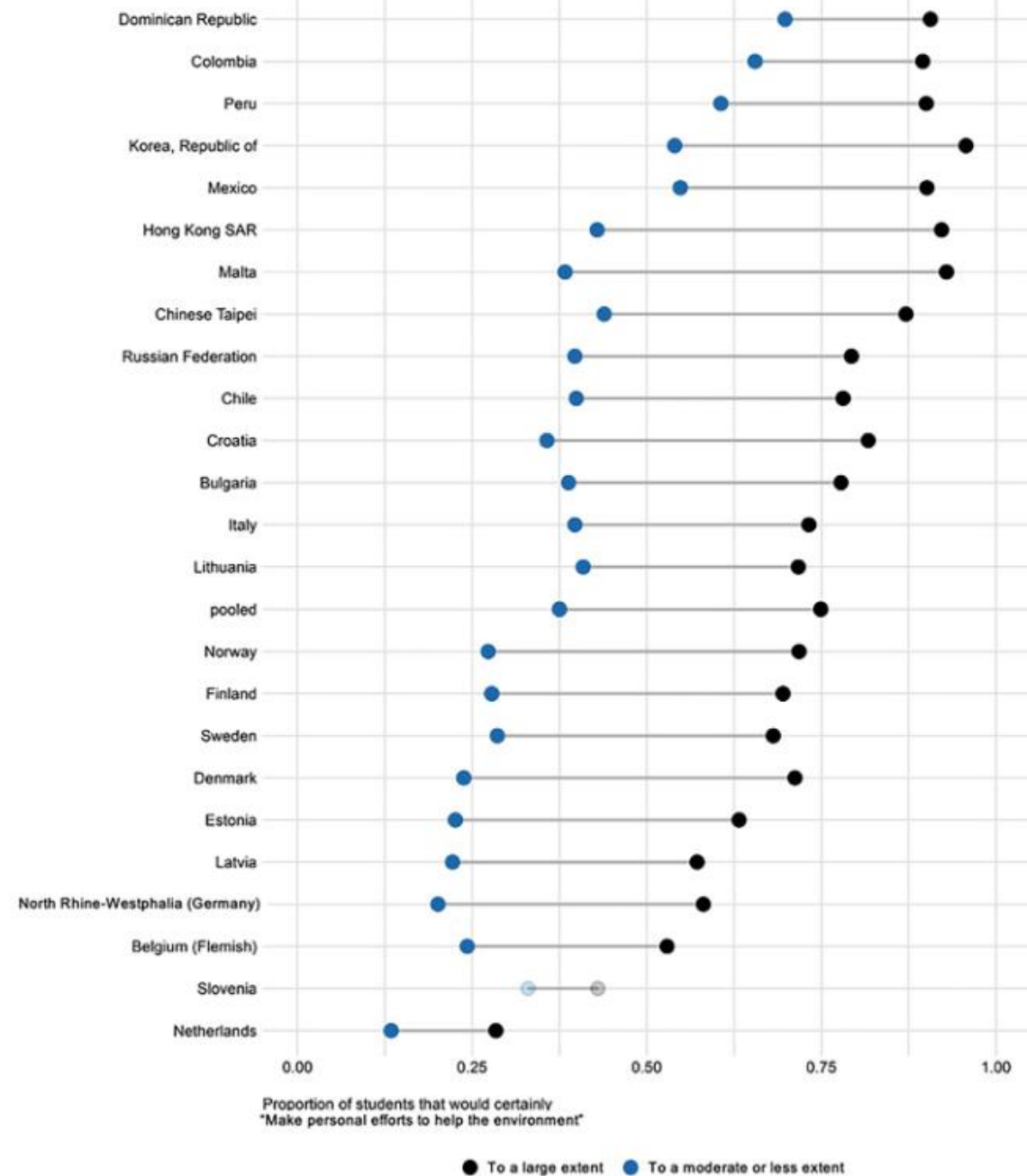


Fig. 10.2 Willingness to act pro-environmentally among students by learning opportunities at school as reported by the students

ADDITIONAL RESOURCES

[Education and Training Monitor 2024 - CHAPTER 1 Learning for sustainability \(ICCS 2022\)](#)

[Damiani, V., & Fraillon, J. \(2025\). Civic and citizenship education, global citizenship education, and education for sustainable development: an analysis of their integrated conceptualization and measurement in the international civic and citizenship education study \(ICCS\) 2016 and 2022. Large-scale Assessments in Education, 13\(1\), 3.](#)

[IMP>ACT \(IMPACT ASSESSMENT FOR ACTION COMPETENCE\)](#) – Horizon Europe project (ICCS and TIMSS mapping).

[TIMSS 2023 Insights Series - Environmental Awareness in TIMSS 2023: Patterns in Achievement, Attitudes, Behaviors, and Contexts \(2025\)](#)

[IEA Research for Education Series](#) – Environmental Sustainability in Europe (TIMSS 2023, forthcoming).

GRACIAS!

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