SEAMEO-The University of Tsukuba Symposium IX

Theme: Resilience for Global Citizenship

Sub-Theme: Challenges in Education under COVID-19

Science Teachers Resilience in Science Learning during Pandemic

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SEAMEO QITEP in Science, Indonesia

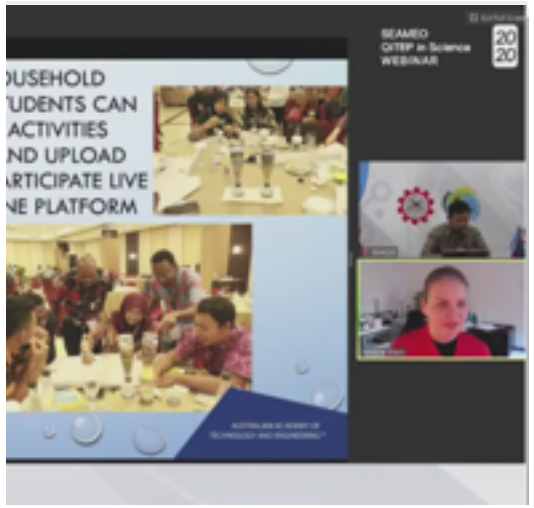
Virtual

11 February 2021

SEAQIS' Role as a Resilient Global Citizen to Keep Learning Continues

1

Online training on various themes such as STEM and Computational thinking.



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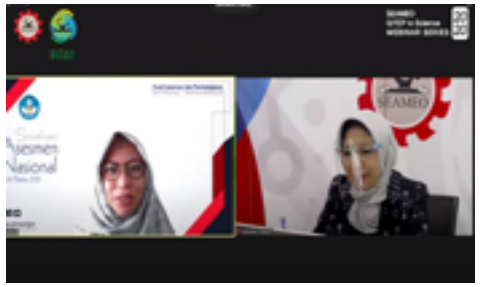
SEAQIS Research and Research Grants

- Development of Android-based Learning Media (Grantee)
- The use of Augmented Reality as a Learning Media (Grantee)



3

International Joint Conference on STEM Education 2020:
"STEM Education pathway through the Crisis"
(in collaboration with IPST and SEAQM)

4

SEAQIS Webinar Series

- Science Learning Innovation through Digital Technologies
- Resources for Remote Learning in STEM, Renewable Energy and other STEM Resources
- Inquiry Based Approaches for Remote Teaching & Learning in STEM Featuring Water in The 21st Century

INTRODUCTION (cont.)

This research is:

a. effort to understand science teachers in regional (mentally & psychologically): science teachers' resilience in this time of crisis
b. basis for developing innovative program to enhance science teachers' competencies in pandemic

COVID-19 Pandemic triggers anxiety among individuals beyond geographical locations and cultural and social structures (Wang et al., 2020).

The Pandemic also affect psychologically such as depression (Braun-Lewensohn & Al-Sayed, 2018) as well as with individual resilience (Kimhi & Eshel, 2016).

RESILIENCE

(noun) re-sil-ience

A method of bouncing back from difficult experiences and coping well

APA, 2014

RESILIENCE OF TEACHERS

The ability to keep bouncing back, to rapidly and effectively recover strengths, it is related to a deep sense of vocation, self-efficacy and motivation to teach (Gu & Day, 2007).

Being resilient implies coping mechanisms to resilience offers a promising insight to consider how teachers address and retain their motivation and dedication to students in times of uncertainty (Gu & Day, 2007).

OBJECTIVES

To create profile of science teachers' resilience in science learning during pandemic and its 7 aspects.

METHOD

Survey design and questionnaire using a 5-points Likert scale to measure teachers' resilience toward science learning during pandemic and was distributed by using google form.

The instrument covers 7 aspects i.e. emotion regulation, impulse control, causal analysis, optimism, empathy, self-efficacy, reaching out

The instrument item (56 items) meets the criteria of Rasch model, illustrated by 0,5 < MNSQ < 1,5 and - 2 < ZSTD < +2 (Boone et al., 2014)

R value of 0.91: high reliability.

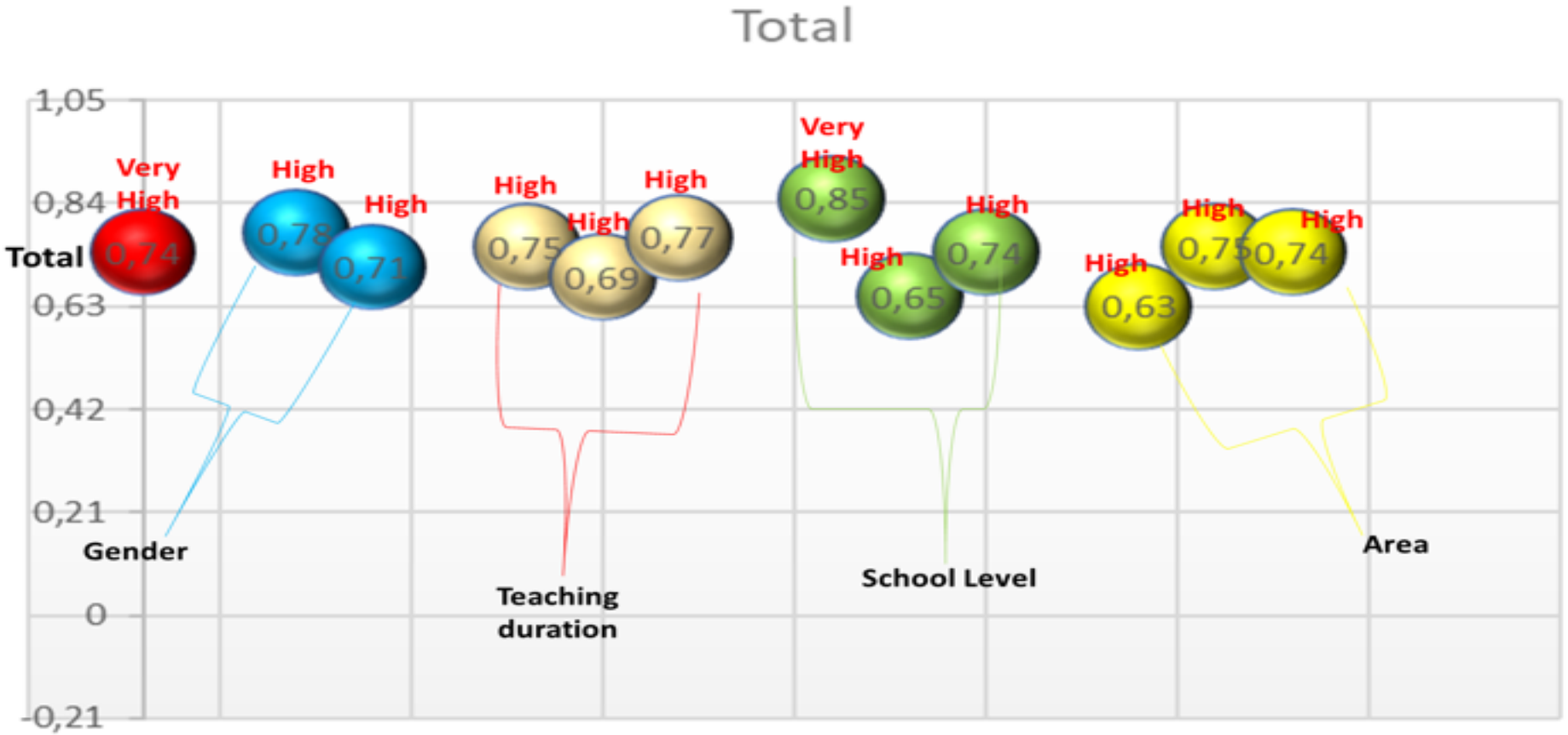
Respondent: 1349 teachers (primary & secondary); 26 provinces in Indonesia.

Data analysis: used the IRT Rasch model approach assisted by Winsteps Aps v. 3.7 and was carried out to classify teachers' resilience and its aspects into 5 scale using (very high – very low) formula of mean ± deviation standard (Syaifuddin, 2012)

FINDINGS AND DISCUSSION

Science Teachers Resilience

(general and based on demography)



Science Teachers Resilience

- **Resilience**: **very high** category
- Resilience based on demography : **high** category

This illustrate that teachers:

- can face, overcome and successfully adapt positively very well to difficulties in science learning during the pandemic.
- learn how to deal with and overcome difficulties during the pandemic → resilient (Grotberg, 2003) which relevant to other findings that young teachers in remote areas can become a youth resilient teachers (Listiyandini & Fitriana, 2013).
- posses resilience which is resulted from successful positive adaptations to learning difficulties during the pandemic (Hendeson & Milstein, 2010, Wosnitza et al., 2014, Reivich & Shatte, 2002).
- succeed in developing positive adaptations → reflects positive thoughts, feelings and ways of life after individuals face difficulties (Baum, 2009).

SCIENCE TEACHER CAPACITY
IN 7 RESILIENCE ASPECTS

Capacity of science teachers in 7 resilience aspects (emotional regulation, impulse control, causal analysis, self-efficacy, optimism, empathy and reaching out): **high** category.

7 aspects based on demography: **high** category

It means:

- science teachers have adequate or good resilience.
- they are able to respond positively and productively to the difficulties in learning during the pandemic (Reivich & Shatte, 2002).

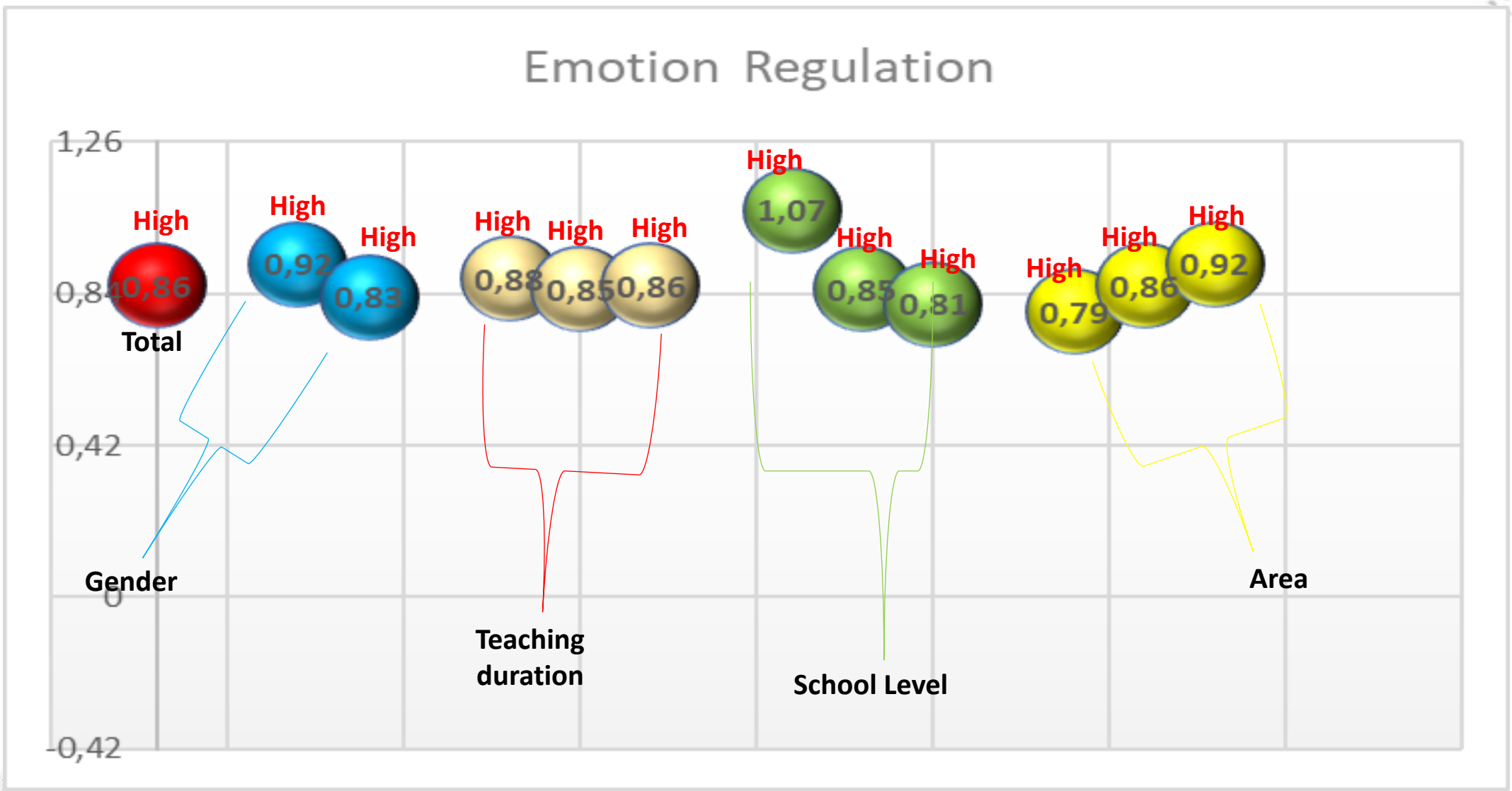
SCIENCE TEACHER CAPACITY
IN 7 RESILIENCE ASPECTS

7 resilience aspects:

- internal protective factors possessed by science teachers, it's called as personal characteristics that protect science teachers:
  a. from risk-causing factors,
  b. reduce the impact of stress from learning during the pandemic,
  c. facilitate and increase very high resilience (Reivich & Shatte, 2002; Henderson & Milstein 2010)
- Achieving positive adaptation shows science teachers have a personal capacity that enables them to achieve and increase resilience (Thomas, 2011).

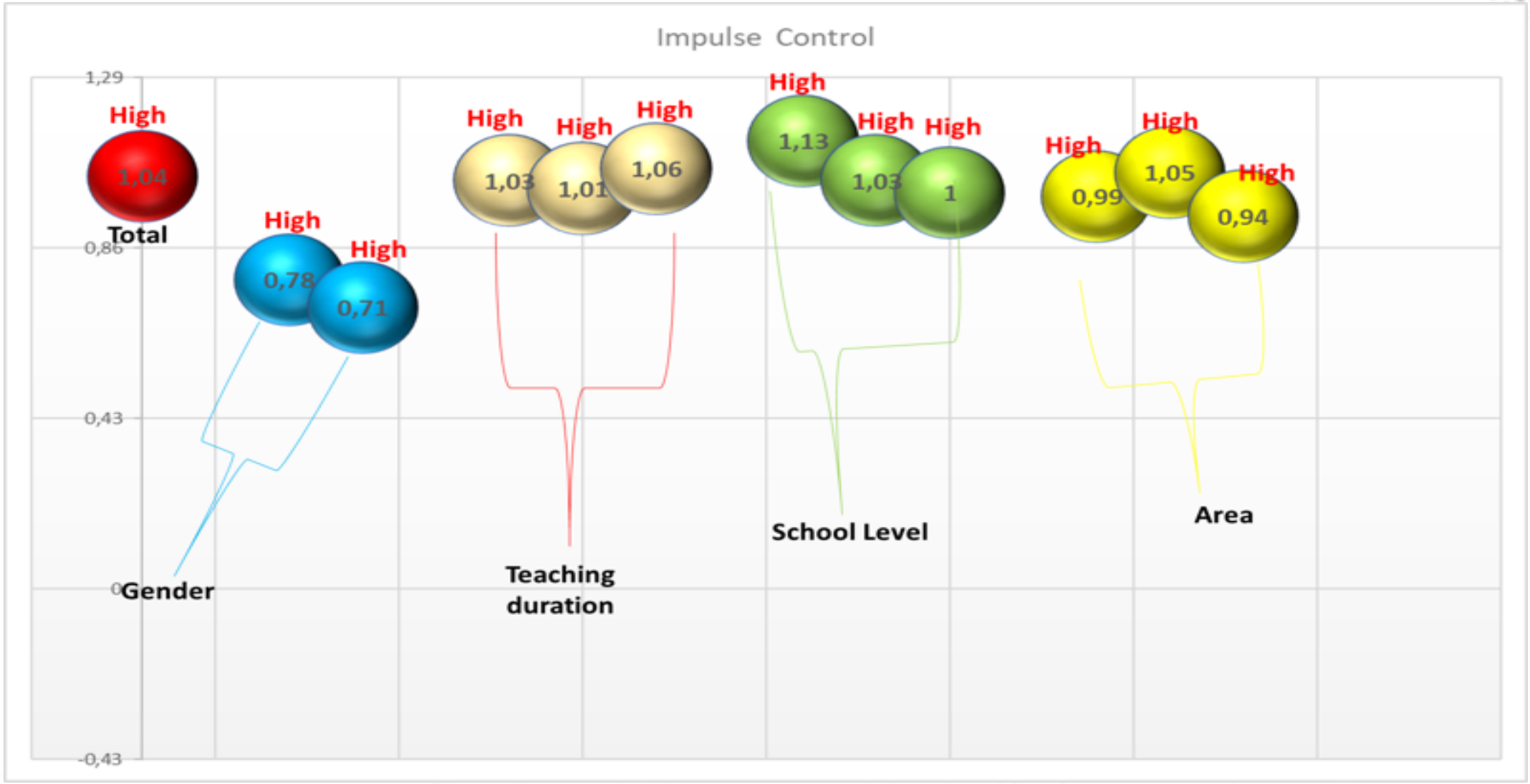
SCIENCE TEACHERS' CAPACITY

IN EMOTION REGULATION



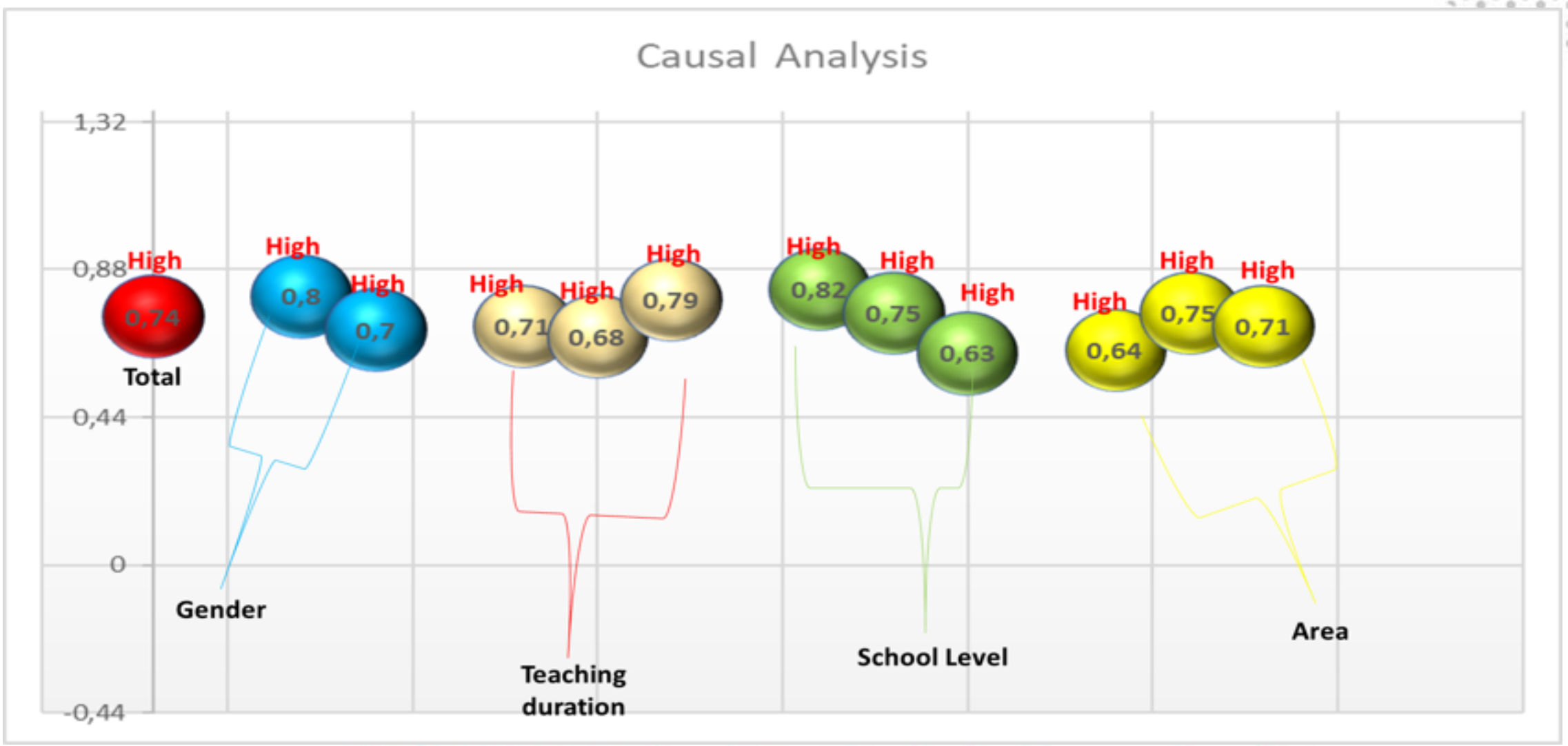
SCIENCE TEACHERS' CAPACITY

IN IMPULSE CONTROL

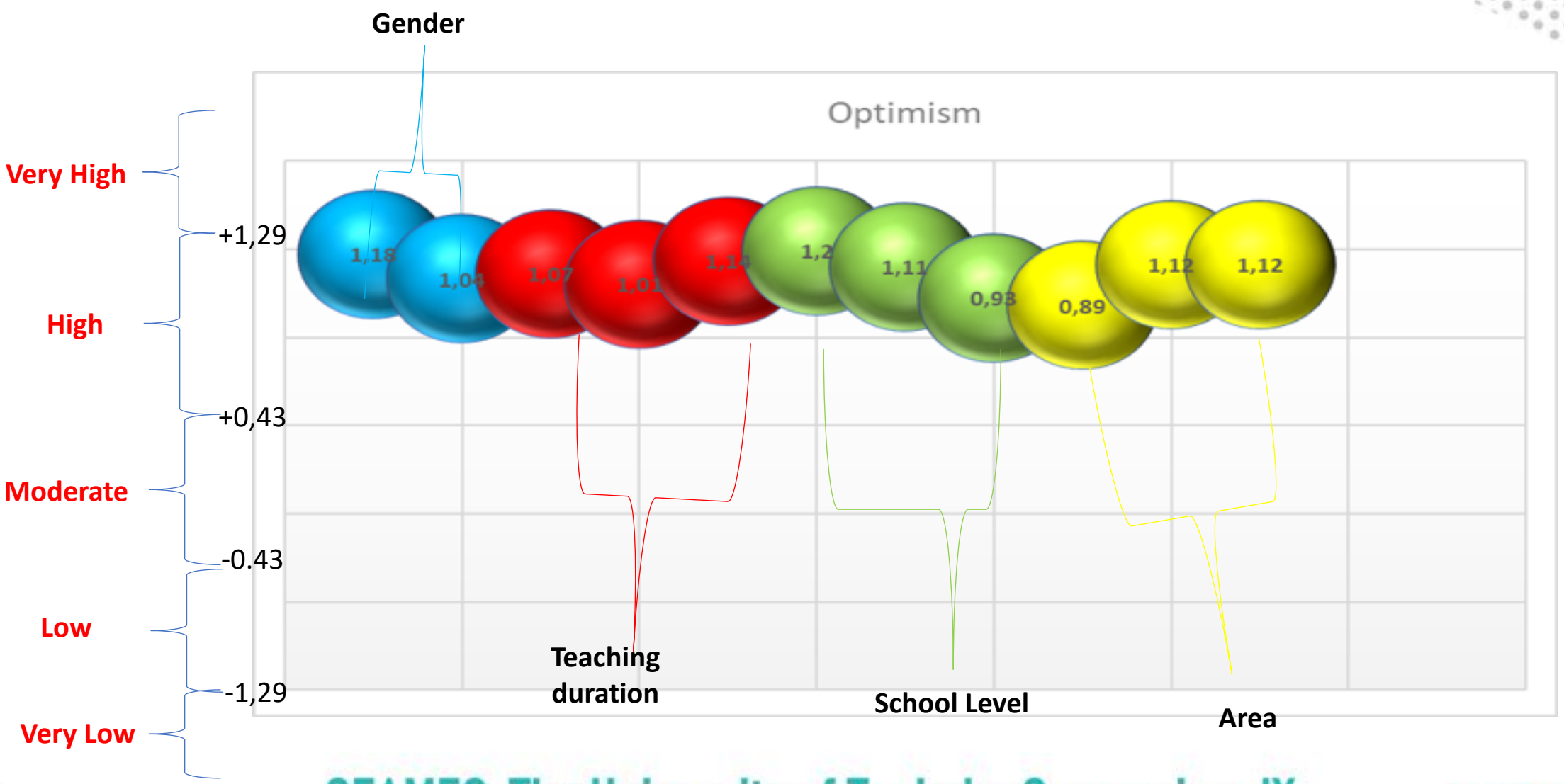


SCIENCE TEACHERS' CAPACITY

IN CAUSAL ANALYSIS

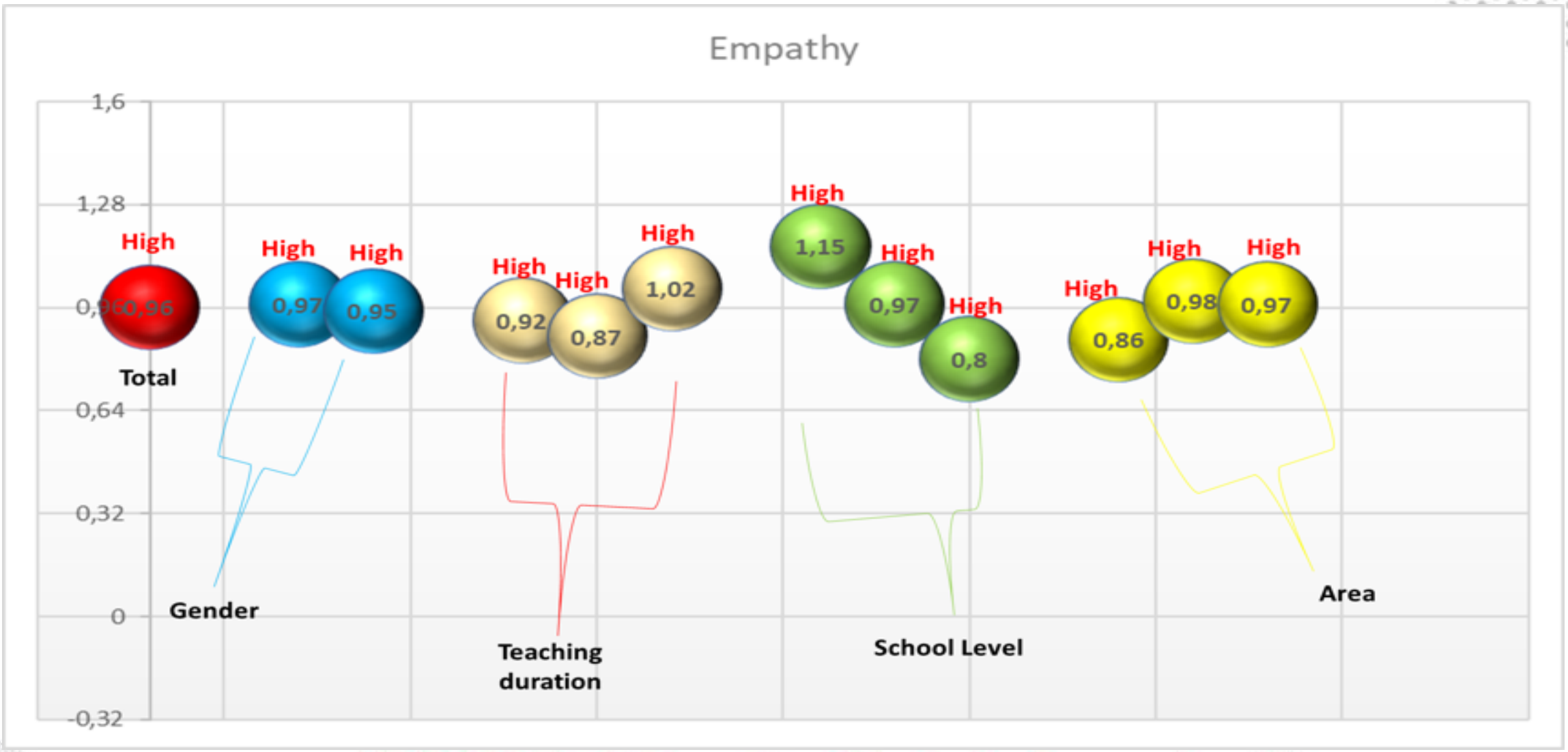


SCIENCE TEACHERS' CAPACITY
IN OPTIMISM



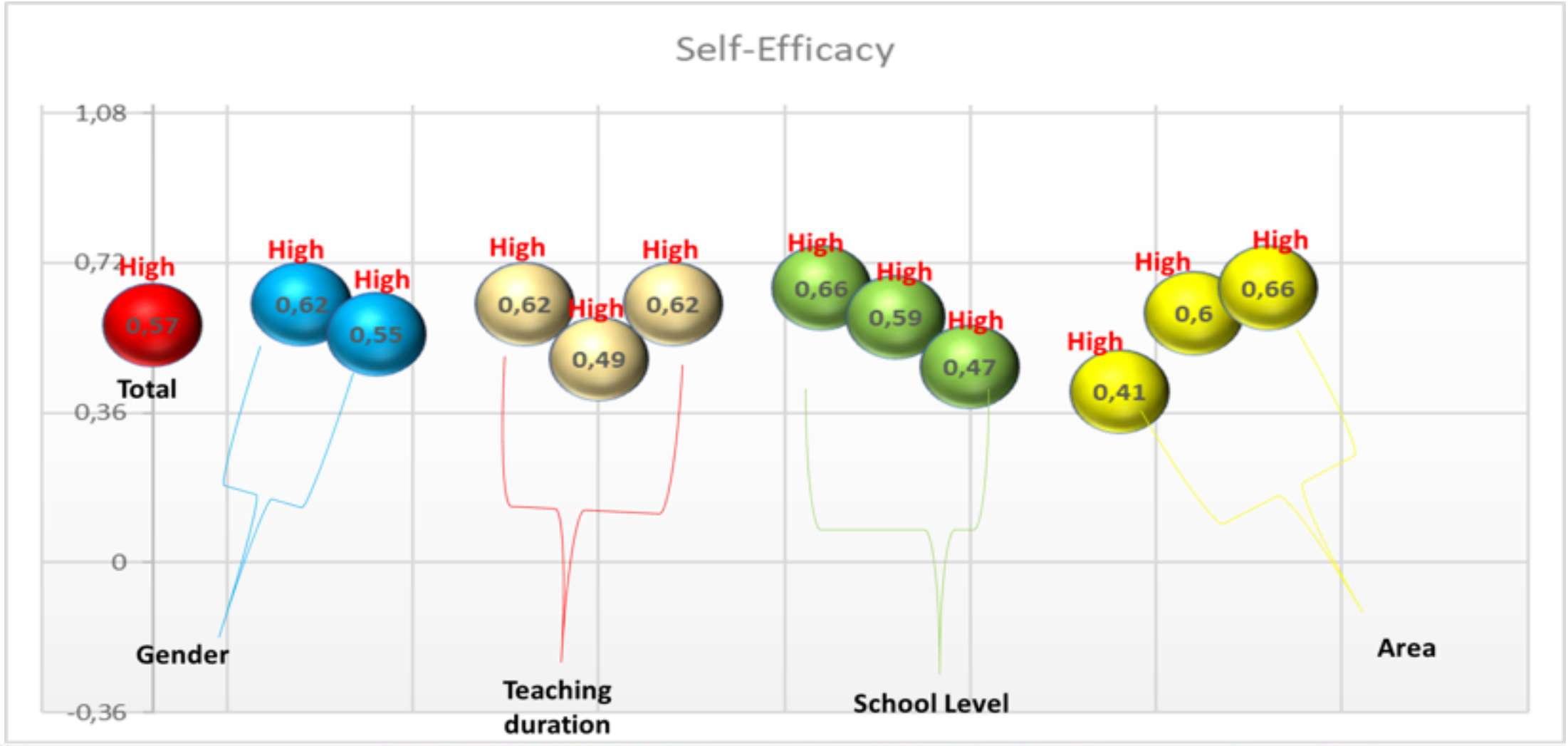
SCIENCE TEACHERS' CAPACITY

IN EMPHATY



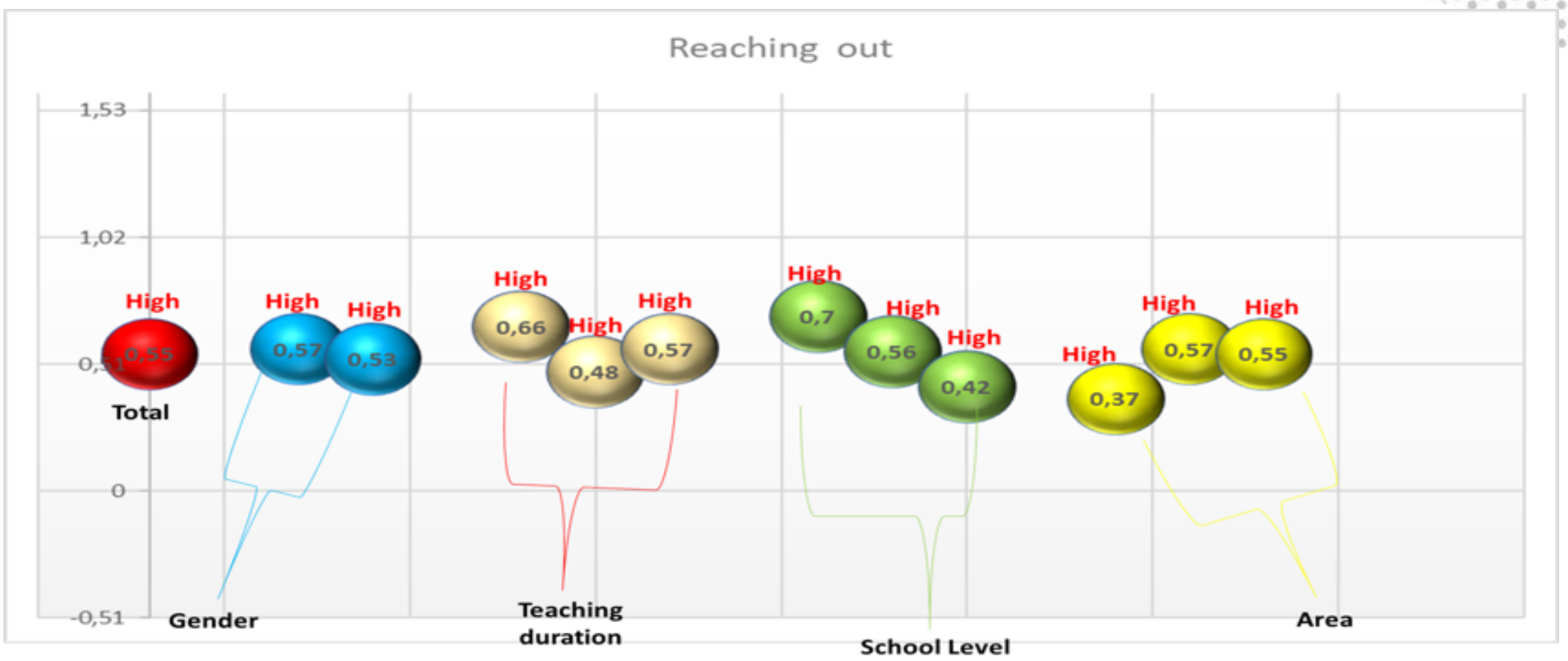
SCIENCE TEACHERS' CAPACITY

IN SELF-EFFICACY



SCIENCE TEACHERS' CAPACITY

IN REACHING OUT



RESILIENCE
AND ITS 7 ASPECTS

- resilience based on demography: all high in category → by mean value: in the upper range or limit
- So resilience: **very high** in category - but its mean: **lower** range.
- 7 resilience aspects: all in the high category → by mean value: there are differences.
- Mean in:
  a. **upper range**: control impulse, optimism, empathy, and causal analysis.
  b. **middle range**: emotional regulation and causal analysis,
  c. **lower range**: self-efficacy and reaching out.

- This research need to be:
  a. conducted to broader science teachers' community in Southeast Asia
  b. followed up by other research to identify factors of science teachers' resilience
  c. SEAQIS innovation programme basis for science learning during pandemic

Are we a resilient Global Citizen?

Are you a resilient teacher?

THANK YOU