

# IEA Compass Briefs



*Researching education, improving learning*

IEA 2021 General Assembly  
(somewhere in the virtual sphere)

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# Japan!



# IEA's Strong Research Focus

From its early founders (Torsten Husen, Neville Postlethwaite, Benjamin Bloom) to today's leading researchers and scholars (many of you are here today) IEA has been a leader in comparative international research in education.

**In the 1950s and  
1960s research  
was slow!**



**Now the world is  
fast!**



# Getting information out there is challenging!

- ILSAs are large and complex studies
- ILSAs take time to conduct
- People have short attention spans (not just policy makers)
- Stories need to make sense to the average person

# Compass Briefs Are One Way To Share Information



# What are IEA Compass Briefs?

- Short works that address issues of interest to a broad range of educational stakeholders.
- Each publication connects study findings to recurrent and emerging questions in education policy debates at the international and national levels.
- The briefs cover a range of themes in relation to teaching and learning in school subjects addressed by the IEA studies.



# But why?

- **Compass Briefs** allows IEA to highlight some of its amazing work in a forum that a non-academic audience may read!
- **Compass Briefs** allow leaders in the field to present important aspects about parts of their work that have made use of IEA data or are important to the IEA community.

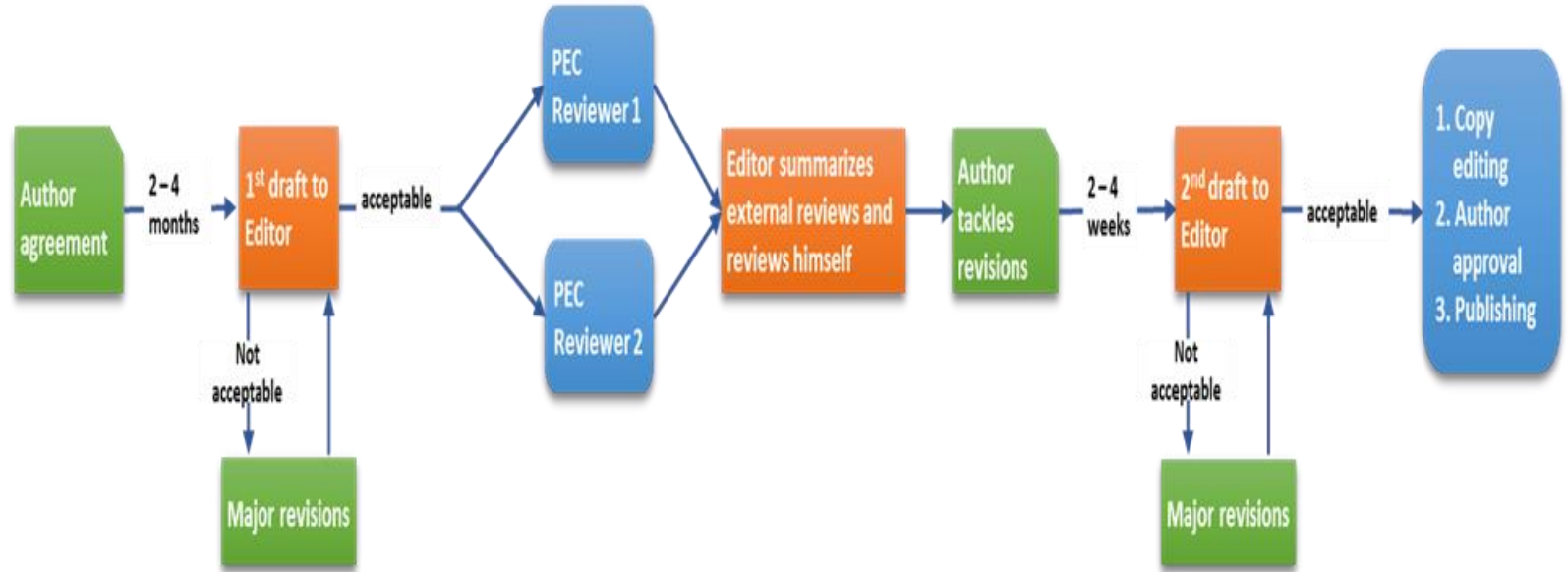


# Who writes them?

- Academics
- Government officials
- Private consultants
- IEA researchers
- NGO and IGO staff and leadership

Lots of cool people (some are even attending this meeting)

# Process?



# Let's talk about a selection of briefs from 2021!



# April 2021: Female Science and Mathematics Teachers: Better Than They Think?

**Female science and mathematics teachers: Better than they think?**

**SUMMARY**

Using IEA's results in International Mathematics and Science Study (TIMSS) 2015 data, this brief explores the relationship between teachers' gender and students' mathematics and science achievement, as well as gender differences in science and mathematics teachers' self-efficacy and its relation to job satisfaction. We find a positive and direct relationship between the gender of the teacher and students' performance in science and mathematics. Girls' and boys' scores taught by female teachers perform just as well as scores and mathematics that male teachers taught. Female teachers' self-efficacy is higher than their male counterparts. Additionally, the relationship between self-efficacy and job satisfaction is positive, and this relation is particularly strong for female science and mathematics teachers. The list of candidates with a discussion of the potential implications of these results, some suggestions on how to help female science and mathematics teachers' self-efficacy, and areas for further research.

**IMPLICATIONS**

- Lower self-efficacy of female science and mathematics teachers may affect girls' own self-efficacy in these subjects and girls' job satisfaction, motivation, engagement, and mathematics STEM careers. There is a need for interventions, for example, leadership training and support from a community of practice, aimed at raising teachers' ratings from IEA teachers' self-efficacy.
- Self-efficacy is positively correlated with job satisfaction and more so among female teachers. Professional training, mentoring, and job satisfaction can boost teachers' self-efficacy and hence students' self-efficacy. Further, job satisfaction can boost teachers' self-efficacy and hence students' self-efficacy.

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**DR DIRK HASTEDT**

**MATTHIAS ECK**

**EUNSONG KIM**

**JUSTINE SASS**

# Findings

- Lower self-efficacy of female science and mathematics teachers may affect girls' own self-efficacy in these subjects, and pursuit of science, technology, engineering, and mathematics (STEM) careers.
  - There is a need for interventions—for example, leadership training and learning from a community of practice—aimed at raising awareness among female STEM teachers of the
- Self-efficacy is positively correlated with job satisfaction and more so among female teachers.
  - Professional training programs tailored to enhance male and female teachers' self-efficacy beliefs also need to address issues related to job satisfaction and overall teacher well-being such as working conditions and school climate.

# June 2021: Exploring Coherence Between Swedish Grades and TIMSS 2015



**Exploring coherence between Swedish grades and TIMSS 2015**

**SUMMARY**

International large-scale assessments (LSAs) have become an important part of the Swedish evaluation system. It is therefore of considerable importance to validate national measures of Swedish students' achievement with their ILSA test scores. Here, we offer results from such a validation study based on Swedish students' test scores in IEA's Trends in International Mathematics and Science Study (TIMSS) 2015 in year 6, their final grades at year 5, and their national test grades at year 7. We find strong to high consistency between what is measured in TIMSS and what is measured by indicators in the Swedish national assessment system.

**IMPLICATIONS**

- Students in Sweden who have higher grades tend to score higher on TIMSS in both mathematics and science, indicating that students' abilities as measured by TIMSS corresponded relatively well with students' abilities as measured by their final grades.
- Correlations between students' grades and their TIMSS scores are moderately high, for both final grades and the national assessment grade, providing further evidence that the evaluation system is robust. An exact correlation should not be expected given that the curriculum and what is measured by TIMSS do not perfectly align.
- Since many reforms in the school system are based on results from ILSA, it is important to confirm that the results from the studies are consistent with what is being taught and assessed in the national system. Knowing that the consistency is moderately high legitimizes the use of results from ILSA in shaping the school system when appropriate.

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# Summary

- Students in Sweden who have higher grades tend to score higher on TIMSS in both mathematics and science, indicating that students' abilities as measured by TIMSS correspond relatively well with students' abilities as measured by their final grades.
- Correlations between students' grades and their TIMSS scores are moderately high, for both final grades and the national assessment grades, providing further evidence that the evaluation system is robust.
- Knowing that the consistency is moderately high legitimizes the use of results from ILSA in shaping the school system when appropriate.

# There are more coming (here are a few)

- Assessment curriculum alignment
- Bullying and mathematics achievement
- Women and girls in science (with UNESCO)



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# Help!

- Our goal is at least 4 per year
- I ALWAYS appreciate topic and author recommendations.
- Please help get the word out:
  - Policy makers
  - Bureaucrats
  - IGOs and NGOs
  - Academics
    - Great for classes



# Thanks!

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Questions, Comments, Ideas

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