Research Training in the 21st Century: The ETN OCCAM

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Key challenges in research & training: Triple I

The European Commission has identified 3 driving forces to foster innovation in knowledge-based societies:

1. Globalization of projects, markets, organizations, and mobility of citizens and staff
   - **→ Internationalization**

2. More often than not, scientific breakthroughs happen to take place at the border of present academic disciplines. New types of problem-driven research programs that go way beyond well-established top-down modes of targeted programs
   - **→ Interdisciplinarity**

3. The interplay of public and private sectors is a contentious and controversial issue (e.g., regulation and deregulation)
   - **→ Intersectoral exchange**

The research problem

One of the most salient findings in the field of education is that there are huge differences in student achievement in international comparative studies

- The **shockingly large gap** between the highest performing countries (most of which are in East Asia) and many European countries corresponds to a difference in attainment of two years of schooling.

- Although this finding has been replicated in several studies (e.g., PISA, TIMSS), at present, the **reasons for and consequences of** such differences are **not well understood**.

Objectives of OCCAM

The OCCAM research program entails 3 working groups on interrelated topics, based on which it will train a new generation of Early-Stage Researchers (ESRs):

1. The Integrity of Educational Outcome Measures
2. Governance of Resources and Decision Making
3. Educational Settings and Processes

→ *Disseminate knowledge on a) how to **compare educational outcomes** in countries over time and inform b) how countries can **reform educational systems** to couple high performance with equity*

OCCAM's approach: inter*national*

A network of 12 excellent partners in seven European countries, Australia, and the US

- <u>Mobility and international experience</u>: An ESR from Hungary moves to Sweden, conducts her secondments in the US, and receives trainings in Cyprus, Germany and Belgium.

- <u>Comparative research approach</u>: Variations in many features of educational policies and institutions can only be observed internationally across countries on the system level (e.g., the existence of central exams).

OCCAM's approach: inter*disciplinary*

Combine the expertise from economy, education, educational measurement, psychology, sociology, and statistics and data science

- Developing a holistic perspective: intrinsic and instrumental value of education; economic and non-economic role of education

- Multimethodology and mixed methods: psychometrics to measure educational outcomes; econometrics for causal inferences from observational data; statistics and data science for big data from international assessments

OCCAM's approach: inter*sectoral*

Beyond the border between academic and non-academic partners

- <u>Knowledge transfer</u>: between the a) non-academic organizations that conduct large-scale assessments and the b) academic organizations that analyze assessment data

- <u>Employability and entrepreneurship</u>: reinforce the innovative capacity of the EU

Working Group 1: The Integrity of Educational Outcome Measures

- The overall aim is to scrutinize the strengths and limitations of the current practice of comparative assessments.

- Evaluate the data quality from the original studies (e.g., PISA, TIMSS) both conceptually and technically in order to determine the integrity of these data for use in research.

  – What can European and national policymakers learn from international comparisons of test scores in a world that is globalized but also socially and culturally diverse?

  – What are useful concepts of educational inequality and justice?

Working Group 1: The Integrity of Educational Outcome Measures

Longitudinal studies on educational outcomes and psychometrics

Europe's leading testing and assessment companies; **evaluates good and fair tests**

US leading testing and assessment companies; particularly involved in **PIRLS and TIMSS**

Quantitative **public policy research and impact evaluation** methodology

Monitor the emerging regimes of **global educational governance**

Academic monitoring/implementation of school reforms; **hosts very large research/training programs**

COMPEAT **databases of older international large-scale studies** conducted before 2000

Recruitment of 15 outstanding early-stage researchers (ESRs)

The ETN OCCAM aims to **educate a new generation of staff with the capacity to advise and influence educational policies** and lead future international studies.

- Competitive salaries (100%, 3 years), excellent working environments with network-wide and local trainings by leading experts
- Open, fair, and transparent announcement to attract international graduates
- ESRs from Europe, Asia, and the Americas

Working Group 1: The Integrity of Educational Outcome Measures

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Edwin Cuellar

Project#1

The influence of item format and scoring on score comparability

Working Group 1: The Integrity of Educational Outcome Measures

Andrés Christiansen

Project#2

Does one size fit all? Evaluating the cross-cultural validity of constructs

Working Group 1: The Integrity of Educational Outcome Measures

www.etn-occam.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement no. 765400.

technische universität dortmund

Erika Majoros

UNIVERSITY OF GOTHENBURG

Project#3

Linking recent and older IEA studies on mathematics and science

Working Group 1: The Integrity of Educational Outcome Measures

Laura Zieger

Project#6

The impact of measurement error in background data on PISA scale scores

Interdisciplinary training and joint supervision

- Four extensive **network-wide training** events
  - In Dortmund, Cyprus, Gothenburg (each 10 days), and Leuven/Brussels (5 days)
  - Thematic, methodological, and complementary-skills training
  - Senior researchers and external experts contribute with their interdisciplinary expertise
- **Joint supervision**
  - Each ESR will be supervised by senior researchers from two different organizations
  - Personal Career Development Plans
  - Annual Progress Assessment Colloquia with all senior researchers
  - Secondments (6 months) and research visits (3 weeks)

Working Group 2: Governance of Human and Financial Resources and Decision Making

- **Market-based reforms** in education are one of the most conspicuous features of the current economic and political discourse.

- The working group will investigate the different **patterns of decentralization, resource allocation, accountability, and competition** to understand the conditions under which certain reforms do (or do not) work.

- The research will contribute empirical evidence on whether the **high expectations of proponents (excellence) or concerns of opponents (segregation)** actually manifest in educational outcomes (levels and equity).

Working Group 2: Governance of Human and Financial Resources and Decision Making

KATHOLIEKE UNIVERSITEIT LEUVEN

Longitudinal studies on educational outcomes and psychometrics

IEA

Researching education, improving learning

Specialized in **databases and software** development for international studies

UiO : University of Oslo

Models for **measurement invariance**; conducts all international studies in Norway

ifo INSTITUT

One of the largest **economic think tanks** in Germany; engages in policy advice

Working Group 2: Governance of Human and Financial Resources and Decision Making

www.etn-occam.eu

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Pietro Sancassani

Project#7

Reforms of teacher professionalization and accountability

Working Group 2: Governance of Human and Financial Resources and Decision Making

www.etn-occam.eu

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Emilie Franck

Project#9

Effectiveness of educational priority policies

Researching education, improving learning

KATHOLIEKE UNIVERSITEIT LEUVEN   technische universität dortmund   IEA Researching education, improving learning   UNIVERSITY AT ALBANY State University of New York   ETS   UCL   CITO   ifo INSTITUT   UNIVERSITY OF GOTHENBURG   ACER   UiO: University of Oslo   University of Cyprus

Working Group 2: Governance of Human and Financial Resources and Decision Making

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Leah Glassow-Hill

Project#11

Teaching quality and school segregation: perpetuating inequalities

UNIVERSITY OF GOTHENBURG

Working Group 3: Educational Settings and Processes

Asia-Pacific's leading testing and assessment organization; responsible for **PISA 2000-2012**

Develops and **redefines theoretical models** about the dynamics of educational effectiveness

Quantitative **public policy research and impact evaluation** methodology

Models for **measurement invariance**; conducts all international studies in Norway

Impact

Multiple channels and audiences

- Internal mutual recognition (e.g., co-author, peer review)
- External dissemination though multiple channels
- "Gold" open access
- Policy advice and public engagement (IEA policy briefs, white paper, conference in Brussels)
- Guide future international assessments
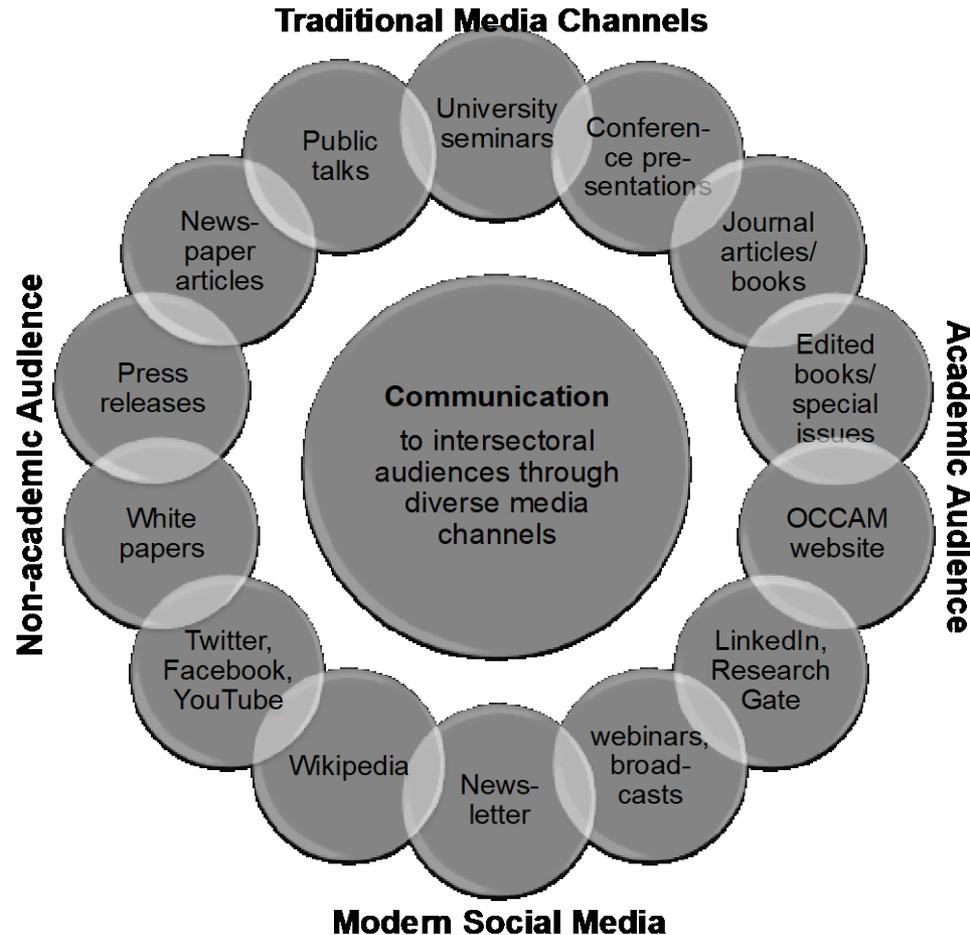
Working Group 3: Educational Settings and Processes

- Investigate the **path from policy to practice**, focusing on class- and school-level features of the educational system.

- Educational policies may be **mediated** by class- and school-level features. Moreover, different policies may **moderate** the relationship between class- or school-level variables and student outcomes (including levels and equity).

- The **key factors of educational settings** and learning processes are typically standardized within countries but they are more **diverse across countries** (e.g., teachers are standardized through national teacher education programs).

Working Group 3: Educational Settings and Processes

Jelena **Veletić**

Project#12

Transformational and instructional leadership as levers of learning

Working Group 3: Educational Settings and Processes

Evi-Evropi Konstantinidou

Project#13

The impact of generic and content-specific teaching practices

Working Group 3: Educational Settings and Processes

Silvan Häs

Project#14

Children from workless backgrounds and the mediating role of parents

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