Indicator-Based Monitoring of an Interdisciplinary Field of Science
The Example of Educational Research

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1. Project Overview

- Title: Development and Changing Dynamics of a Heterogeneous Social Science Field. Using the Example of Educational Research
- Duration: 05/2011 - 04/2014
- Funding: Leibniz Association (SAW funding measure)
- Project Lead: German Institute for International Educational Research (DIPF)
- Project cooperation between:
2. Project Context and Objective

„Empirical Turn“ in Educational Research

Project Context

New Governance Model in Research Funding

Basic and third party funding in higher education institutions in Germany over time

Income (in bn €)
Rate of third party funding (%)

Project Objective

- Analysis of the structure and development of and within educational research
- Analysis of communication processes within educational research
Data Sources

Project Data
- Sources:
  - SOFIS (GESIS)
  - BMBF Framework Programme
- Coverage: 9139 projects
- Period: 1995-2009 (end of project)

Publications
- Random sample of 270 projects of the core disciplines: educational sciences, psychology, sociology; periods: 1995-97, 2006-08
- Data collection of research output
- Coverage: about 2.000 publications

Analysis of Reception
- Web of Science, Scopus, Google Scholar
3. Types of Research Indicators

<table>
<thead>
<tr>
<th>Input</th>
<th>Human resources</th>
<th>Infrastructure (equipment, laboratory space etc.)</th>
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<tbody>
<tr>
<td></td>
<td>Financial resources</td>
<td>Third party funding</td>
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<table>
<thead>
<tr>
<th>Output</th>
<th>Prizes</th>
<th>Bibliometric indicators</th>
<th>Patent indicators</th>
<th>Other:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Performance</td>
<td></td>
<td></td>
<td>PhD, Habilitation, Speeches, Board Memberships, Stipends</td>
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<tr>
<td></td>
<td>Activity</td>
<td>Reception</td>
<td>Cognitive</td>
<td>Collaboration</td>
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<tr>
<th>Efficiency</th>
<th>Various Input/Output relations</th>
<th>Inter and intra-institutional comparisons</th>
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4.1 Analysis of Project Data
Research Activity Over Time (1/2)

Hypothesis
An increase of research activity within educational research

Results
Growing interest in educational research
Decline in psychological projects

Period:
- 1995-1997
- 1998-2000
- 2001-2003
- 2004-2006
- 2007-2009

Share:
- Educational sciences
- Psychology
- Sociology

n = 9139
Research Funding Over Time (1/2)

Hypothesis
An increase in third party funding

Results
In total, there is an increase in third party funding and a decline in self-financing of projects over time.
Funding Bodies Over Time (2/2)

Hypothesis
Increase in the share of funding by foundations and the EU.

Results
There, indeed, is an increase in the share of funding by foundations and the EU. Differences in funding sources diminish.
Research Cooperation Over Time (1/2)

Hypothesis
A growth in national and international cooperations

Results
Networking among research institutions increases
Research Cooperation Over Time (2/2)

Hypothesis
A higher proportion of cooperation projects in third party funded than in in-house projects

Results
The share of cooperations is higher in third party funded than in self-financed projects.
Empirical Research Methods

Hypothesis
Increase in the use of empirical research methods

Results
There is an increase in the use of empirical methods between the last two time blocks.
4.2 Analysis of Publication Data
### 4.2 Analysis of Publication Data – First Results

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**Hinze/Glänzel (2012) based upon Hornbostel 1999: p. 59.**
Publication Activity

Hypothesis
An increase in the number of publications.

Results
The number of publications in total declines. Likewise, discipline-specific differences seem to decline.
Discipline-Specific Publication Types (1/3)

Hypothesis
A greater number of journal articles in psychology than in sociology or in educational sciences.

Results
In psychology there is a preference for publishing in journal articles. Over time, a significant increase in the number of journal articles is measurable in educational sciences. In sociology the number of journal articles decreases significantly.
Publication Types (2/3)

Peer-Review Status of Journal Articles

Hypothesis
A greater number of publications with peer-review status in psychology

![Percentage of Journal Articles with Peer-Review Status](n=306)

Results
In general psychological projects publish more often in peer-reviewed journals than the other disciplines do. Over time we measured a significant decrease in sociological and a significant increase in educational projects.
Discipline-Specific Publication Types (3/3)

**Hypothesis**
A greater number of monographs in sociology and educational sciences than in psychology

**Estimated Marginal Means (EMM) of Monographs for each Discipline (n=558)**

<table>
<thead>
<tr>
<th>Period</th>
<th>Sociology</th>
<th>Educational Sciences</th>
<th>Psychology</th>
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<tbody>
<tr>
<td>1995-1997</td>
<td>0.48</td>
<td>0.3</td>
<td>0.28</td>
</tr>
<tr>
<td>2006-2008</td>
<td>0.33</td>
<td>0.26</td>
<td>0.2</td>
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</table>

**Results**
Monographs are more often published in educational sciences and in sociology than in psychology. In psychology and in educational sciences publishing in monographs decreases significantly. In educational sciences this decrease is most pronounced.
Multi-Authorship

Hypothesis
An increase in the number of authors per publication

Results
Over time, the number of authors in total per publication grows significantly due to a significant increase in psychology and in educational sciences.
International Character of Publications

Hypothesis

Number of publications written in English increases.

Results

The number of publications written in English increases significantly. Comparing the three core-disciplines, psychological publications have the highest share of publications written in English.
5. Summary

**Research projects** in educational research are characterized by:

- a growing importance in the Social Sciences,
- an increase in third-party funding,
- a growing diversity in funding sources,
- an increase in networking activities among research institutes,
- a slow increase in the use of empirical research methods since the year 2005.

**Publishing** in educational research is characterized by:

- an increase in networking of authors,
- an internationalization effect over time,
- disciplinary differences; over time publishing in educational research seems to align to psychological publication behaviour.
6. Outlook

- Further analysis on the interrelation between research projects and publications,
- Thematic analysis of projects,
- Further analysis of publication data,
- Reception analysis of publications,
- Indicator specification.
Acknowledgements

Alexander Botte
Ute Sondergeld

Jürgen Wiesenhütter
Dr. Gabriel Schui
Katja Singleton
Veronika Kuhberg-Lasson

Dr. Sybille Hinze
Valerie Aman
Marion Schmidt

Peter Mutschke
Dr. Philipp Mayr
Karima Haddou ou Moussa
Dr. Andreas Oskar Kempf
Thank you for your attention!

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Bibliography

