



Exploring Distance Education Research

Olaf Zawacki-Richter, Ph. D.





Institute for Education and Media Research

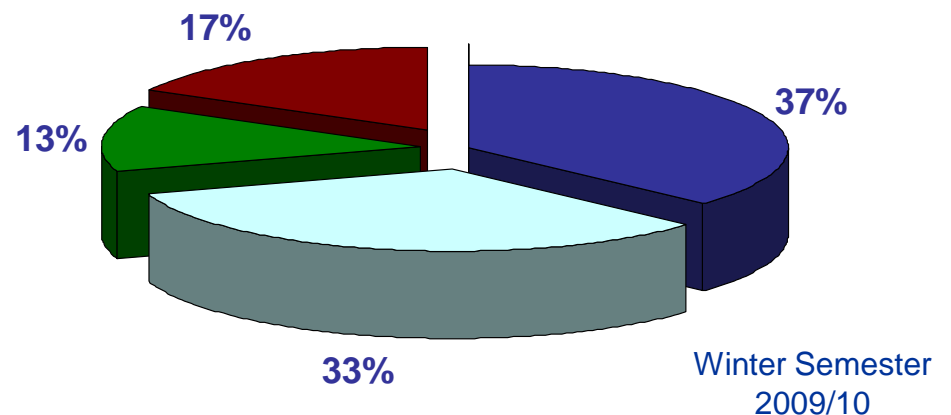


FernUniversität in Hagen

- the only state funded distance teaching university in Germany
- founded in 1974
- biggest university in Germany in terms of enrolments (70,000 students)
- 80 % part-time students
- average age between 29 and 35 years, 44 % woman

FernUniversität in Hagen

-  Faculty of Business Administration and Economics: 37%
-  Faculty of Humanities and Social Sciences: 33%
Educational Science, History, Political Sciences, Philosophy, Psychology, Sociology
-  Faculty of Law: 13%
-  Faculty of Mathematics and Computer Science: 17%
Electrical Technology and Information Technology, Computer Science, Mathematics



Overview

- **Delphi study:** Classification of research areas
- **Review:** (5 journals, N=695 papers, 2000-2008)
 - Research gaps and priority areas
 - Methods, gender, and collaboration patterns
- **Impact analysis:** (12 journals, N=1,416 papers, 2003-2008)
 - Open vs. closed access
 - Journal clusters
- **Implications** for further research

Questions

- What are the research areas in distance education, and how can they be categorized?
- Where are gaps and priority areas?
- Is there a trend towards more qualitative research and collaboration?
- Do distance education journals prefer to publish qualitative or quantitative studies?
- Who are leading contributors and where do they come from?
- Do male and female researchers tend to choose different research topics?
- Does the methodological approach affect the rate of collaboration?
- Do Open Access Journals have a greater impact than in terms of citations and perceived value than the proprietary ones?

Summary of four studies

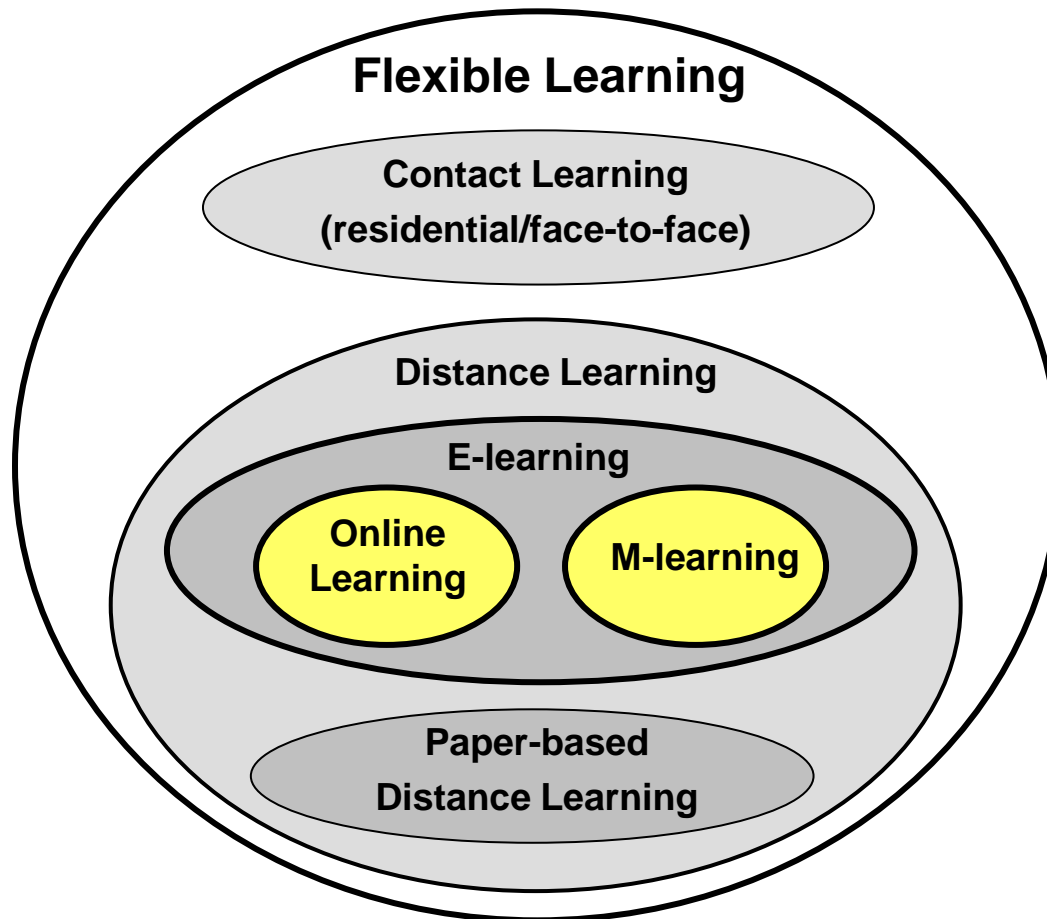
Zawacki-Richter, O. (2009). Research areas in distance education – a Delphi study. *International Review of Research in Open and Distance Learning*, 10(3), 1-17.

Zawacki-Richter, O., Bäcker, E. M., & Vogt, S. (2009). Review of distance education research (2000 to 2008) – analysis of issues, methods and authorship patterns. *International Review of Research in Open and Distance Learning*, 10(6), 21-50.

Zawacki-Richter, O., & von Prümmer, C. (2010). Gender and collaboration patterns in distance education research. *Open Learning*, 25(2), 95-114.

Zawacki-Richter, O., Anderson, T., & Tuncay, N. (2010). The growing impact of open access distance education journals - a bibliometric analysis. *Journal of Distance Education*, 24(2). In Print.

Online Distance Education: Flexible Learning



International Delphi Study: Research Areas

- Expert panel: 25 individuals from 11 countries (average of 27 years of professional experience in distance education)
- 1. round: Experts were asked to list 10 important research areas
- Classification of research areas based on qualitative text analysis of responses
- 2. round: Experts were asked to rate research areas on a scale of importance; What are the most neglected research areas?

Classification of research areas

- Three broad research perspectives or levels with 15 research areas:
 1. **Macro level: Distance education systems and theories**
→ global system level: 5 research areas
 2. **Meso level: Management, organization and technology**
→ institutional level: 7 research areas
 3. **Micro level: Teaching and learning in distance education**
→ individual level: 3 research areas

Classification of research areas

Macro level: Distance education systems and theories

1. Access, equity and ethics
2. Globalization of education and cross-cultural aspects
3. Distance teaching systems and institutions
4. Theories and models
5. Research methods in distance education and knowledge transfer

Micro level: Teaching and learning in DE

13. Instructional design
14. Interaction and communication in learning communities
15. Learner characteristics

Meso level: Management, organisation and technology

6. Management and organisation
7. Costs and benefits
8. Educational technology
9. Innovation and change
10. Professional development and faculty support
11. Learner support services
12. Quality assurance

Most neglected research areas

Priority areas:

- Macro level: cross-cultural aspects of transnational education
- Meso level: innovation and change management, educational management and organisation, costs and funding of TeL
- Micro level: added value of Web 2.0 applications (instructional design)

Review of research literature: Sample

- Review of articles that were published in 5 prominent DE journals
- 9 years: 2000 to 2008
- N=695 (675 English, 20 French)
- Journals:
 - Open Learning (UK)
 - Distance Education (Australia)
 - American Journal of Distance Education (USA)
 - Journal of Distance Education (Canada)*
 - International Review of Research in Open and Distance Learning (Canada)*

* = Open Access

Journal	No. of articles	Percent	Volumes
OL	154	22,2	15-23
DE	156	22,4	21-29
AJDE	112	16,1	14-22
JDE	114	16,4	15-22
IRRODL	159	22,9	1-9
Total	695	100,0	

Inter-rater reliability

- Research areas and methods were coded by a team of three researchers.
- Cohen's kappa (κ) (Cohen, 1960) which is a coefficient for the degree of consistency among raters based on the number of codings in the coding scheme:
 - $\kappa = .40 - .60$ (fair)
 - $\kappa = .60$ to $.75$ (good)
 - $\kappa > .75$ (excellent) (Fleiss, 1981; Bakeman & Gottman, 1997)
- $K_{\text{Areas}} = .675$
- $K_{\text{Methods}} = .855$

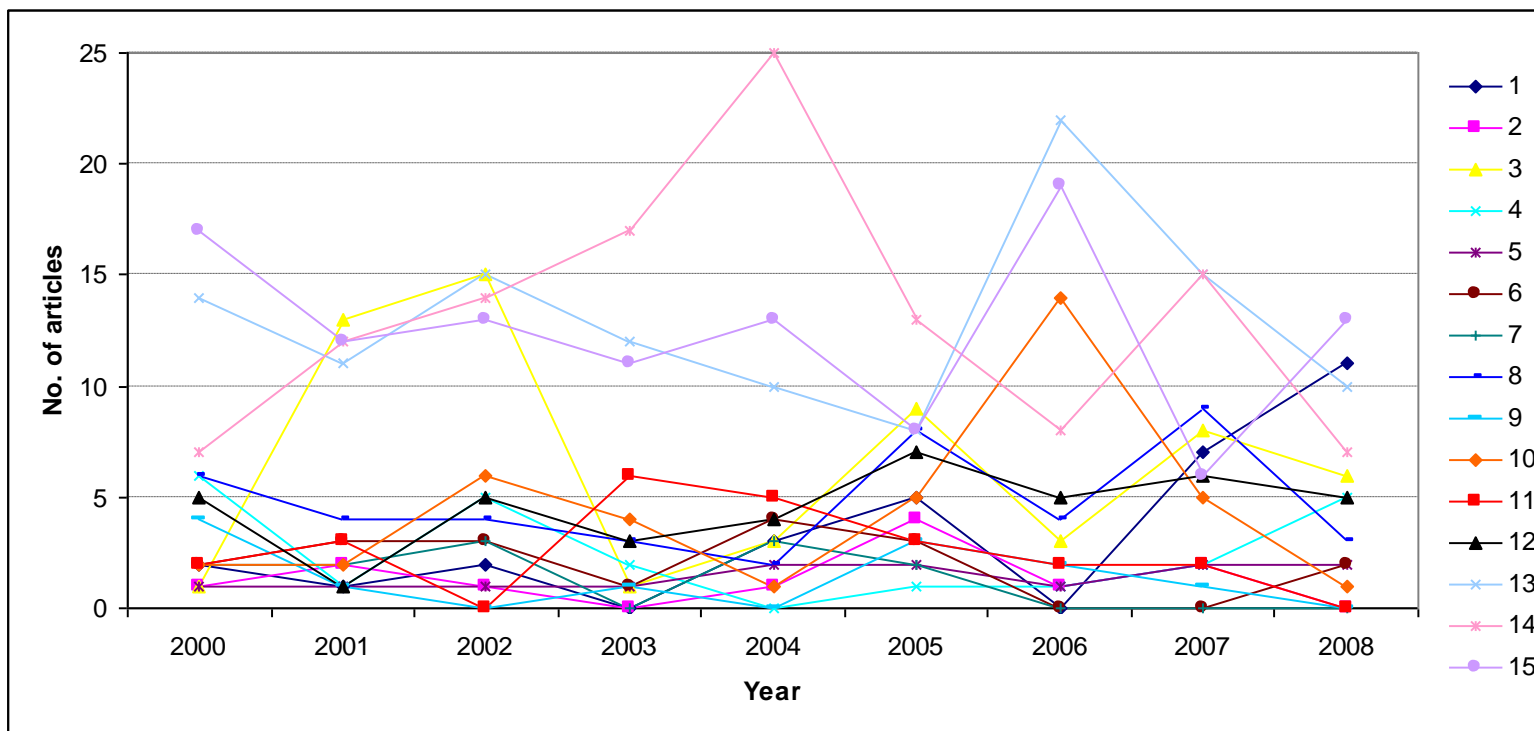
Bakeman, R., & Gottman, J. M. (1997). *Observing interaction - an introduction to sequential analysis*. Cambridge: Cambridge University Press.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20, 37-46.

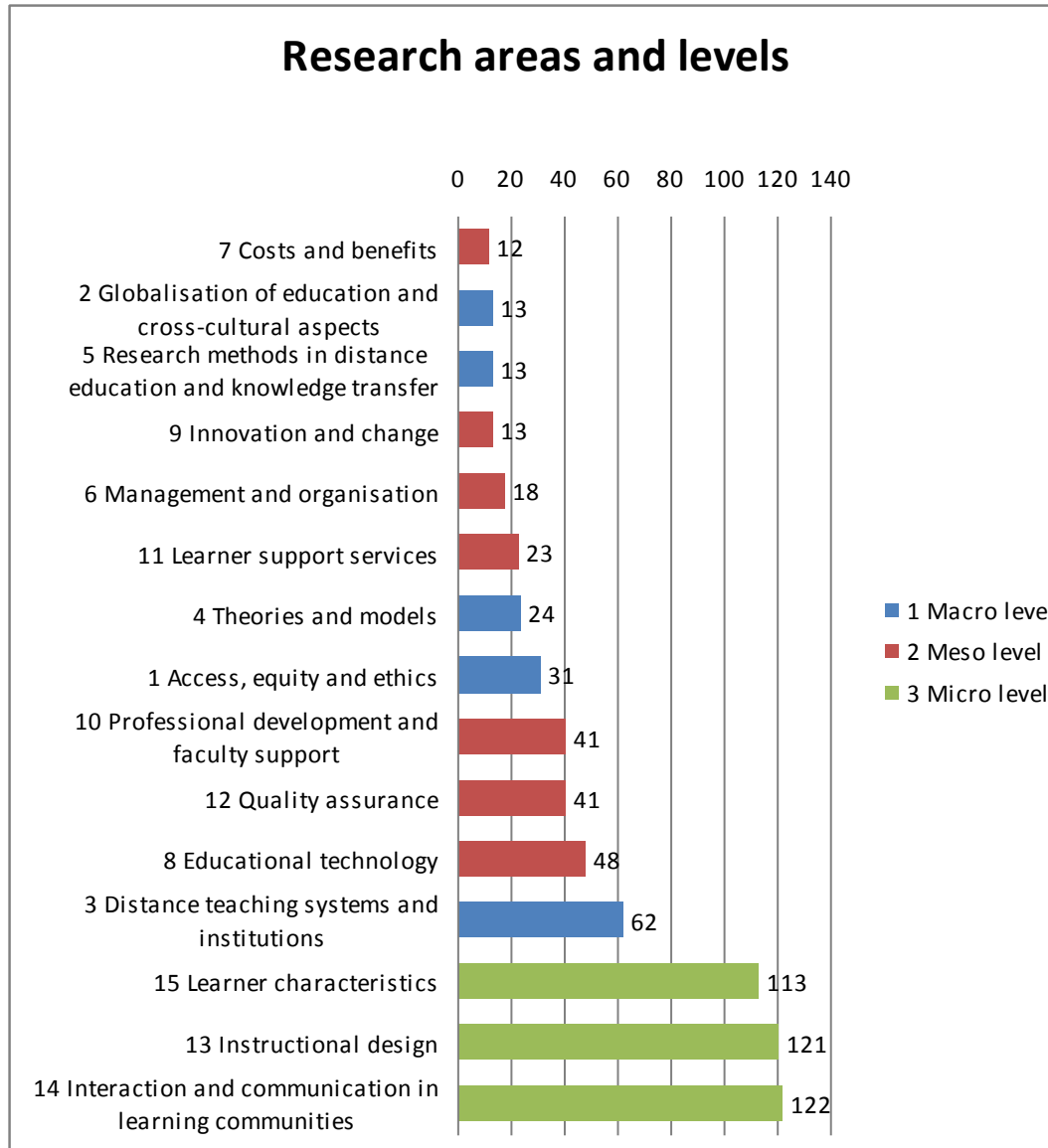
Fleiss, J. L. (1981). *Statistical methods for rates and proportions*. New York: Wiley.

Research trends and gaps

- No significant trends between 2000 and 2008:



N=695



Rank	Research Area	Level	F	%	Cum. %
1	Interaction and communication in learning communities	3	122	17,6	17,6
2	Instructional design	3	121	17,4	35,0
3	Learner characteristics	3	113	16,3	51,2
4	Distance teaching systems and institutions	1	62	8,9	60,1
5	Educational technology	2	48	6,9	67,1
6	Quality assurance	2	41	5,9	72,9
6	Professional development and faculty support	2	41	5,9	78,8
8	Access, equity and ethics	1	31	4,5	83,3
9	Theories and models	1	24	3,5	86,8
10	Learner support services	2	23	3,3	90,1
11	Management and organisation	2	18	2,6	92,7
12	Research methods in DE and knowledge transfer	1	13	1,9	94,5
12	Globalisation of education and cross-cultural aspects	1	13	1,9	96,4
12	Innovation and change	2	13	1,9	98,3
13	Costs and benefits	2	12	1,7	100,0
Total			695	100,0	

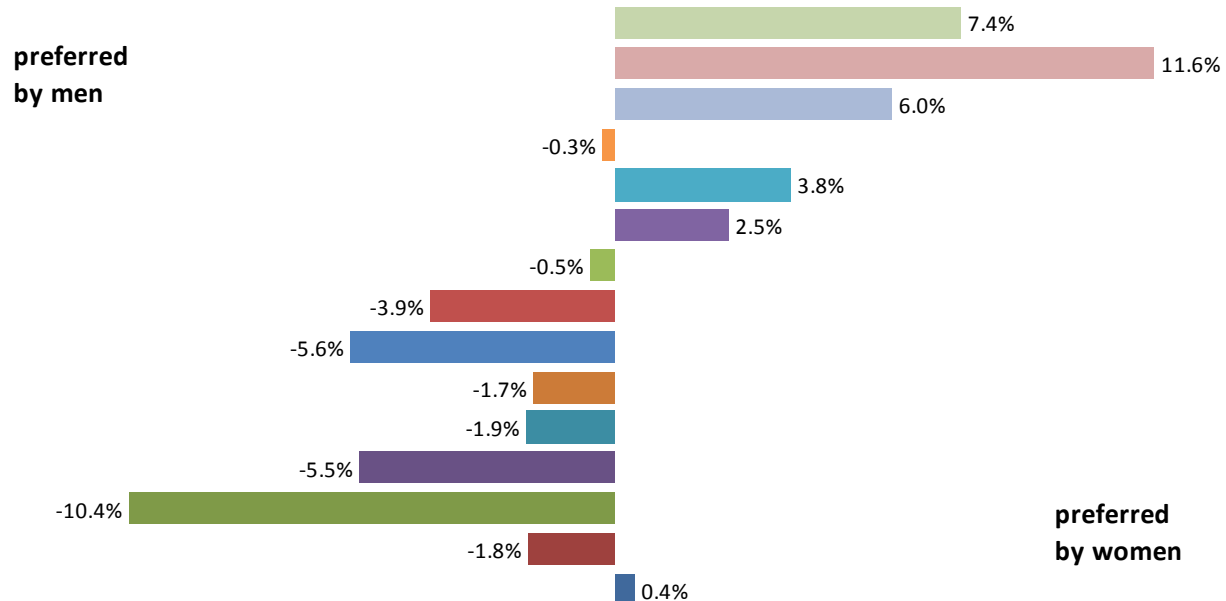
Level: 1=macro, 2=meso, 3=micro; F=frequency; Cum. %=cumulative %

Gender differences in research areas (single authors)

- 15 Learner characteristics
- 14 Interaction and communication in learning communities
- 13 Instructional design
- 12 Quality assurance
- 11 Learner support services
- 10 Professional development and faculty support
- 9 Innovation and change
- 8 Educational technology
- 7 Costs and benefits
- 6 Management and organisation
- 5 Research methods in DE and knowledge transfer
- 4 Theories and models
- 3 Distance teaching systems and institutions
- 2 Globalisation of education and cross-cultural aspects
- 1 Access, equity and ethics

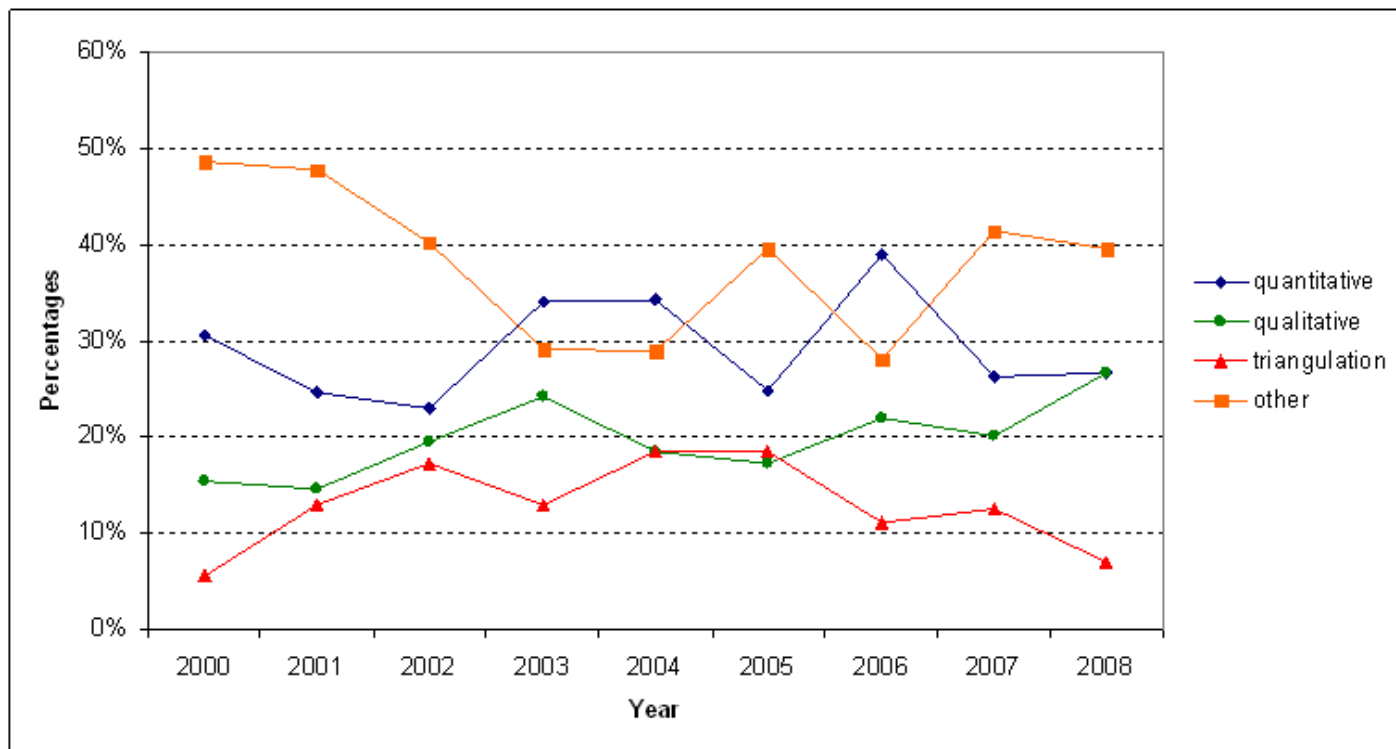
$\chi^2 = 38.07, df=14, p < .001$
 Cramer's V = .36, $p < .001$

N=302
 159 (M)
 143 (F)



Research methods

- No significant trends towards more or less quantitative studies, trinangulation or descriptive/theoretical papers
- However, a modest significant trend towards more papers that are qualitative in nature (Spearman's $\rho = .73$; $p < .05$).



Research methods

- Association between journals and methods is highly significant, $\chi^2 = 142.35$, $df=12$, $p < .001$, Cramer's V of .26, $p < .001$.
- 38% of articles are descriptive (Berge & Mrozowski, 2000: 76%; Mishra, 1997: 48%)

Method	OL	DE	AJDE	JDE	IRRODL	Total
Quantitative	33	42	71	27	29	202
% within Journal	21,4%	26,9%	63,4%	23,7%	18,2%	29,1%
Qualitative	23	46	12	27	30	138
% within Journal	14,9%	29,5%	10,7%	23,7%	18,9%	19,9%
Triangulation	24	11	13	32	10	90
% within Journal	15,6%	7,1%	11,6%	28,1%	6,3%	12,9%
Other	74	57	16	28	90	265
% within Journal	48,1%	36,5%	14,3%	24,6%	56,6%	38,1%
Total	154	156	112	114	159	695
% within Journal	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

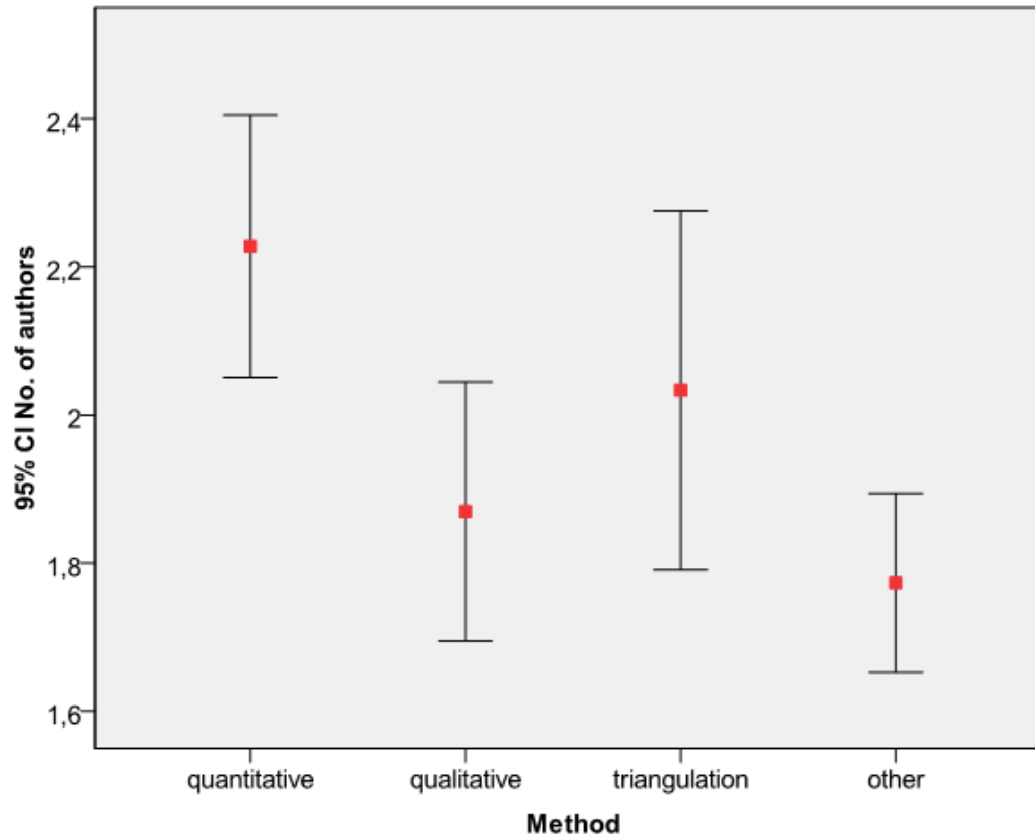
Collaboration

- Collaboration is operationalised through co-author relationships
- Average number of authors per article is 2.7 (discounting the 302 articles submitted by single authors).
- Hunter & Leahey (2008) found an average number of 2.6 in leading sociology journals.
- Significant trend towards collaboration (Spearman's $\rho = -.73$; $p < .05$).
- Mishra (1997): 62% Single-author articles (N=361)

Hunter, L., & Leahey, E. (2008). Collaborative research in sociology: trends and contributing factors. *The American Sociologist*, 39(4), 290-306.

Collaboration and methods

- Means: quantitative studies (2.33), qualitative studies (1.87), mixed design (2.04), other (1.66).
- Significant difference between quantitative and qualitative papers



Collaboration and methods

- Consistent with previous findings from sociology (Hunter & Leahey, 2008): papers using quantitative methods are four times more likely to be co-authored than articles that do not use empirical data.
- They offer the following explanation: Quantitative analysis can be more easily "divided among multiple authors, especially relative to the more typically holistic approaches to analyzing qualitative data" (p. 299).

Authorship patterns: Leading contributors

- 1,148 different authors contributed to the 695 articles in this study.
- 48 authors who published at least 3 articles:
 - Canada (17)
 - USA (9)
 - UK (8)
 - Australia (5), China (5)
 - Israel (2)
 - Japan/South Korea (1)
 - New Zealand (1)

Authorship patterns: Leading contributors

Jeong, Allan C. (USA)	7	Zhang, Wei-Yuan (China)	4
Conrad, Dianne (Canada)	6	Abrami, Philip C. (Canada)	3
Fahy, Patrick J. (Canada)	6	Ally, Mohamed (Canada)	3
Latchem, Colin (Australia)	6	Anderson, Bill (New Zealand)	3
Stacey, Elizabeth (Australia)	6	Baumann, Uwe (UK)	3
Anderson, Terry (Canada)	5	Caspi, Avner (Israel)	3
Berge, Zane L. (USA)	5	Dennen, Vanessa P. (USA)	3
Gunawardena, Charlotte N. (USA)	5	Fung, Yvonne (China)	3
Kanuka, Heather (Canada)	5	Garrison, Randy (Canada)	3
Andrusyszyn, Mary-Anne (Canada)	4	Gorsky, Paul (Israel)	3
Bernard, Robert M. (Canada)	4	Kennepohl, Dietmar (Canada)	3
Bonk, Curtis J. (USA)	4	Lou, Yiping (USA)	3
Bourdages, Louise (Canada)	4	Mason, Robin (UK)	3
Bullen, Mark (Canada)	4	Moisey, Susan D. (Canada)	3
Cleveland-Innes, Martha (Canada)	4	Nunan, Ted (Australia)	3
Deschenes, A.-J. (Canada)	4	Rennie, Frank (UK)	3
Jung, Insung (South Korea/Japan)	4	Ros i Solé, Cristina (UK)	3
Kirkwood, Adrian (UK)	4	Rovai, Alfred P. (USA)	3
McGreal, Rory (Canada)	4	Shelley, Monica (UK)	3
Murphy, Elizabeth (Canada)	4	Shin, Namin (China)	3
Murphy, Karen L. (USA)	4	Simpson, Ormond (UK)	3
Ng, Kwok Chi (China)	4	Sims, Rod (Australia)	3
Smith, Peter J. (Australia)	4	Taplin, Margaret (China)	3
Wisher, Robert A. (USA)	4	Woodley, Alan (UK)	3

Authorship patterns: Countries

- The origin of the first author was taken into consideration (54 countries)
- The vast majority (>80%) comes from only 5 countries

Country	OL	DE	AJDE	JDE	IRR-ODL	Total	Percent	Cum-mul. %
1 USA	10	54	90*	14	41	209	30,1	30,1
2 Canada	12	12	16	81*	30*	155	22,3	52,4
3 UK	65*	16	2	1	15	99	14,2	66,6
4 Australia	13	32*	0	3	18	66	9,5	76,1
5 China	17	5	0	2	5	29	4,2	80,3
6 India	5	3	0	2	2	12	1,7	82,0
7 New Zealand	4	3	0	0	3	10	1,4	83,5
8 Israel	3	0	1	2	3	9	1,3	84,7
9 South Africa	5	2	0	0	1	8	1,2	85,9
10 Nigeria	2	0	0	0	4	6	,9	86,8
11 Norway	1	0	0	0	4	5	,7	87,5
12 Netherlands	1	3	0	0	1	5	,7	88,2
13 Belgium	0	1	0	3	0	4	,6	88,8
14 Brazil	1	0	1	0	2	4	,6	89,4
15 Germany	0	0	0	1	3	4	,6	89,9
16 Japan	3	0	0	0	1	4	,6	90,5
17 Philippines	0	2	0	0	2	4	,6	91,1
18 South Korea	1	1	1	0	1	4	,6	91,7
19 Spain	0	0	0	0	4	4	,6	92,2
20 Botswana	1	0	0	0	2	3	,4	92,7

Impact analysis: Open vs. Closed Access

- Directory of Open Access Journals (DOAJ, 2010): >4,820 journals
- How do experts evaluate the quality and prestige of OA journals in contrast to CA journals?
- Do OA journals produce even more citations over time?
- Comparison of 6 Open Access (OA) and 6 Closed Access (CA) journals
- Sample: 1,416 full papers (2003 to 2008)
- Hypothesis:
The impact of open access journals (b_1) in terms of average citations per article and year between 2003 and 2008 is significantly higher than the impact of closed journals (b_2), thus

$$H_1: b_1 > b_2$$

How to measure “impact”?

- **Citation analysis** with “Publish or Perish” based on Google Scholar data
- Hirsch’s h Index:
“A scientist [or a journal] has index h if h of his/her N_p papers have at least h citations each, and the other (N_p-h) papers have no more than h citations each” (Hirsch, 2005, p. 16569).
- **Journal Prestige Survey: Editors and Editorial Board Members** (83 of 277).
- Rating scale according to Nelson, Buss & Katzko (1983):

Please assign numbers to the journals listed below according to how you would rate them, where 5 = outstanding, 4 = excellent, 3 = good, 2 = adequate, 1 = poor. You may leave blanks if you do not recognize a journal.

Hirsch, J. E. (2005). An index to quantify an individual’s scientific research output. *Proceedings of the National Academy of Sciences of the United States of America*, 102(46), 16569–16572.

Nelson, T. M., Buss, A. R., & Katzko, M. (1983). Rating of scholarly journals by chairpersons in the social sciences. *Research in Higher Education*, 19(4), 469-497.

Why Google Scholar Data?

- **ISI (or Web of Science, WoS), Thompson Publishing**
 - covers mainly English-language journals from North America and Europe;
 - is limited to only 8,700 journals,
 - does not count citations from books and conference proceedings;
 - provides different coverage between research fields;
 - none of the 12 DE journals were listed in 2009
- **SCOPUS, Elsevier**
 - access to over 15,000 titles
 - among them only IRRODL and IJDET
- **Google Scholar**
 - much better coverage (about 80% of all articles)
 - time consuming data management

Sample

Journal	Open Access?	N_{Total}[*]	N_{GS}^{**}	Coverage (%)
AJDE	Closed	74	74	100.0
DE	Closed	108	106	98.1
OJDLA	Open	155	151	97.4
IRRODL	Open	113	104	92.0
JDE	Open	68	58	85.3
OL	Closed	105	93	88.6
QRDE	Closed	133	105	78.9
IJDET	Closed	136	104	76.5
TOJDE	Open	255	184	72.2
IJOL	Closed	92	63	68.5
AsianJDE	Open	77	48	62.3
EURODL	Open	100	33	33.0
Total		1,416	1,123	

* Total number of articles published in the journals between 2003 and 2008

** Total number of articles found by GS in the same time period

Publish or Perish (http://www.harzing.com/pop.htm)

H Harzing's Publish or Perish

File Edit View Help

- ▼ **Citation analysis**
 - Author impact analysis
 - Journal impact analysis
 - General citation search
 - Multi-query center
- ▼ **Program maintenance**
 - Check for updates
- ▼ **Help resources**
 - About Publish or Perish
 - Help contents
 - What's new
 - Version information

Journal impact analysis
← → ?

Perform a citation analysis for one or more journals

Query

Journal title:
 Biology, Life Sciences, Environmental Science
 Business, Administration, Finance, Economics
 Chemistry and Materials Science
 Engineering, Computer Science, Mathematics
 Medicine, Pharmacology, Veterinary Science
 Physics, Astronomy, Planetary Science
 Social Sciences, Arts, Humanities

Exclude these words:

Year of publication between: and:

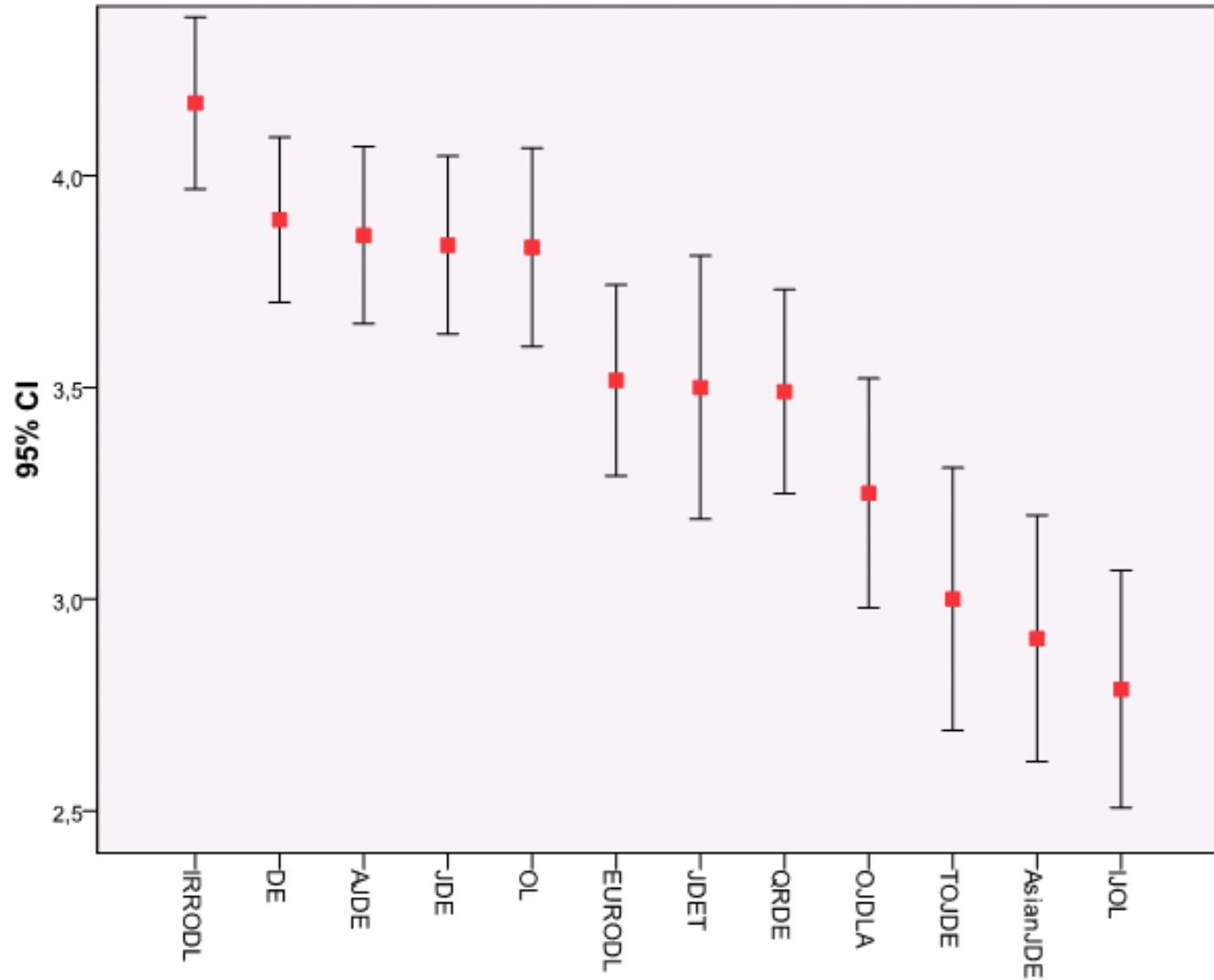
Results

Papers:	133	Cites/paper:	10.91	h-index:	21	AWCR:	232.20
Citations:	1451	Cites/author:	989.01	g-index:	34	AW-index:	15.24
Years:	8	Papers/author:	103.08	hc-index:	16	AWCRpA:	154.94
Cites/year:	181.38	Authors/paper:	1.61	hI-index:	11.03	e-index:	23.30
				hI,norm:	16	hm-index:	17.42

Cites	Per year	Rank	Authors	Title	Year	Publication
<input checked="" type="checkbox"/>	138	17.25	1	AC Jeong	2003	American Journal of Distanc...
<input checked="" type="checkbox"/>	122	20.33	2	DR Garrison, M Clev...	2005	American Journal of Distanc...
<input checked="" type="checkbox"/>	92	11.50	3	MD Roblyer, WR Wi...	2003	... Journal of Distance Educa...
<input checked="" type="checkbox"/>	87	10.88	4	PE Williams	2003	American Journal of Distanc...
<input checked="" type="checkbox"/>	57	8.14	5	M DeTure	2004	American Journal of Distanc...
<input checked="" type="checkbox"/>	43	7.17	6	PJ Fahy, M Ally	2005	American Journal of Distanc...
<input checked="" type="checkbox"/>	36	6.00	10	DS Stein, CE Wanst...	2005	American Journal of ...
<input checked="" type="checkbox"/>	35	7.00	8	S Young	2006	American Journal of Distanc...
<input checked="" type="checkbox"/>	35	5.83	9	LV Morris, SS Wu, C...	2005	... Journal of Distance Educa...
<input checked="" type="checkbox"/>	34	4.86	7	Y Lee, MP Driscoll, ...	2004	... Journal of Distance Educa...
<input checked="" type="checkbox"/>	33	4.71	11	PA Dupin-Bryant	2004	American Journal of Distanc...

2.8.3774
26 May 2010

Perceived value



Perceived value

- Editors are biased towards their “own” journal

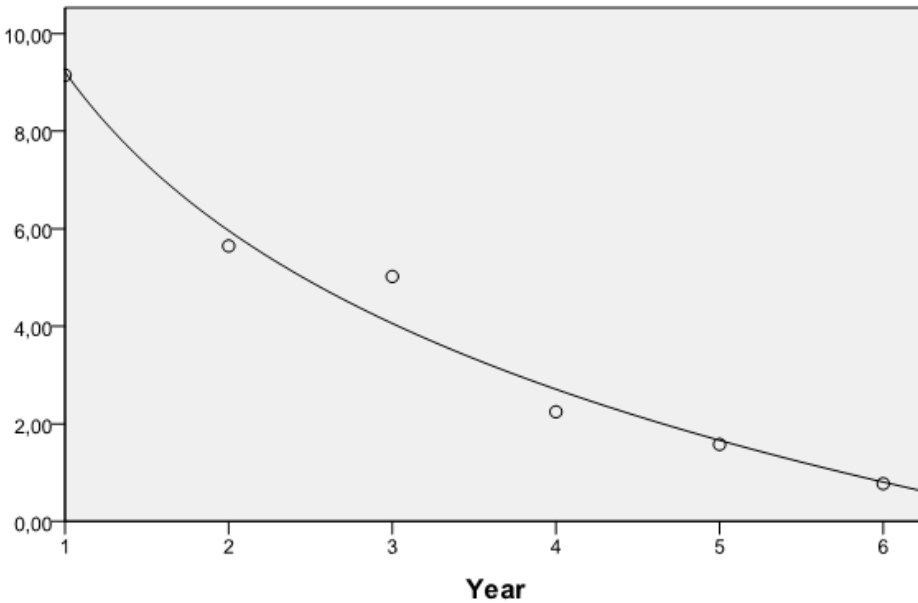
Journal	Non-Editor			Editor			t	df	Sig.
	M	SD	n	M	SD	n			
AJDE	3.86	.90	63	3.88	.84	8	-.05	69	.957
Asian JDE	2.85	.87	33	3.10	1.20	10	-.73	41	.468
DE	3.80	.80	51	4.19	.75	16	-1.70	65	.095
EURODL	3.46	.84	50	3.80	1.03	10	-1.13	58	.265
IJOL	2.79	.88	34	2.77	1.17	13	.08	45	.937
JDET	3.38	1.06	40	4.13	.99	8	-1.85	46	.070
IRRODL	4.02	.92	49	4.52	.51	21	-2.34	68	.022*
JDE	3.80	.83	54	4.14	.69	7	-1.05	59	.297
OJDLA	3.14	.88	44	4.50	.58	4	-3.03	46	.004*
OL	3.80	.99	55	4.00	.67	10	-.61	63	.542
QRDE	3.44	.85	48	4.33	.58	3	-1.79	49	.079
TOJDE	2.61	.90	33	3.81	.98	16	-4.28	47	<.001*

*significant at alpha=0.05 level.

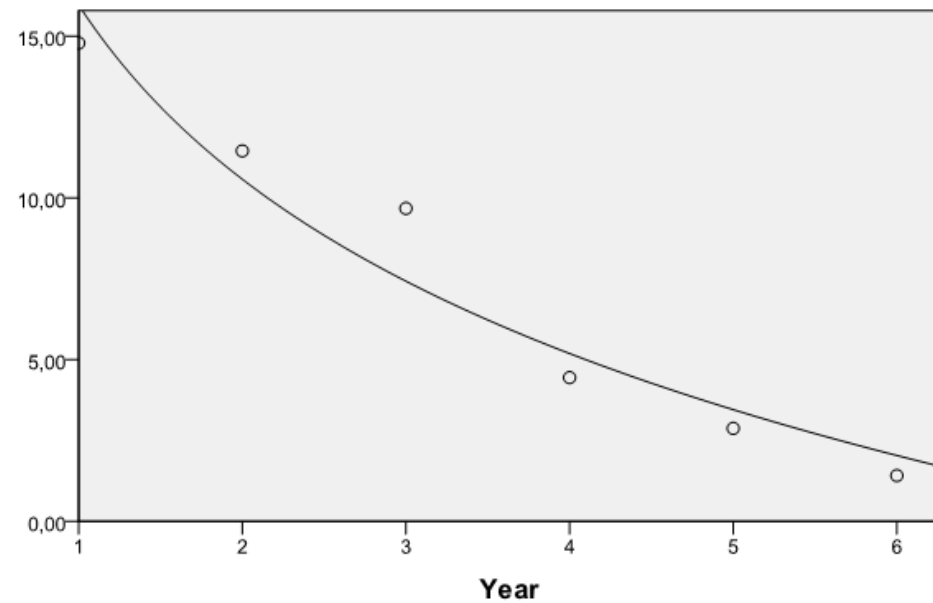
Fisher’s combined probability test (Winer, 1971, p. 49): $\chi^2(24)=84.86$,
 $p<.001$

Development of impact over time

OJDLA cites per paper



AJDE cites per paper

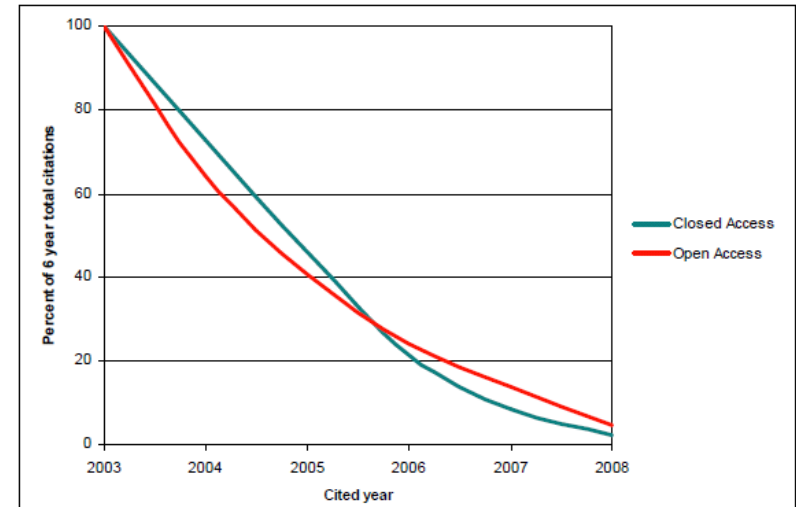


OA and CA compared

- Logarithmic regression

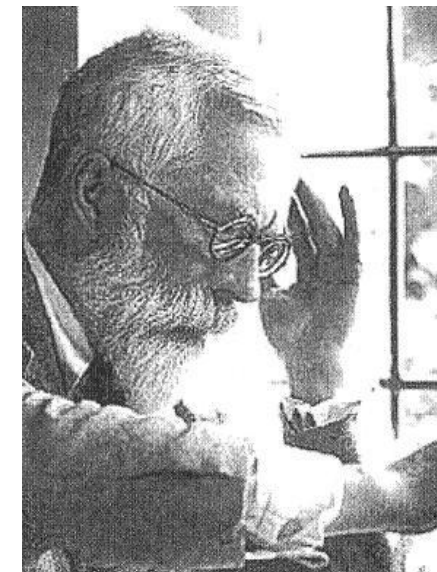
Journal group	Slope
Open Journal	-2.981* (b_1)
Closed Journal	-5.121* (b_2)

*significant at alpha=0.05 level



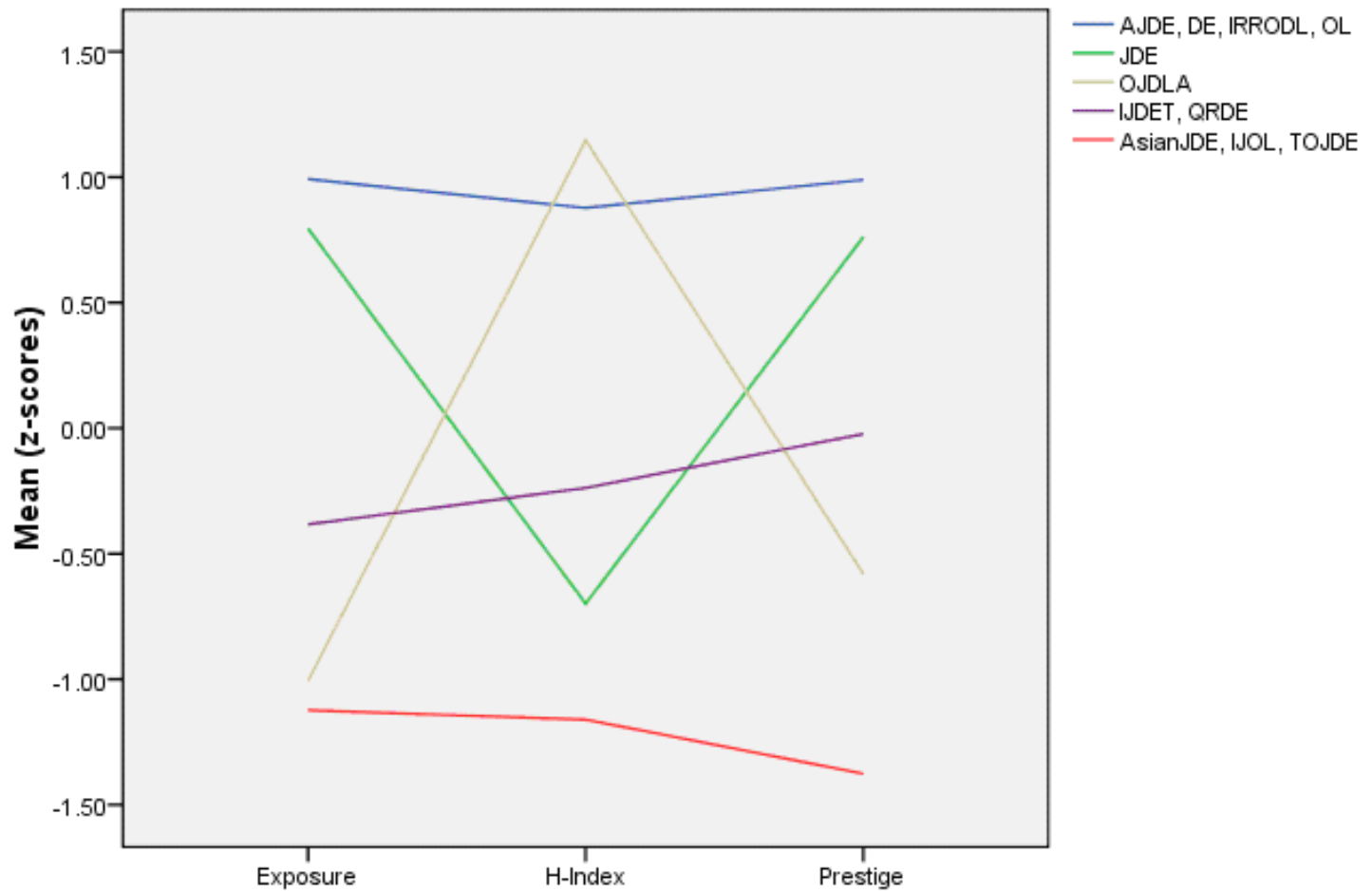
- z-Test (Paternoster et al., 1998, p. 862): $z=1.73$, $p= .08$
- Trend towards earlier citations in OA journals, however, not significant on the 5% confidence level.

Paternoster, R., Brame, R., Mazerolle, P., & Piquero, A. (1998). Using the correct statistical test for the equality of regression coefficients. *Criminology*, 36(4), 859-866.



Field (2005, p. 25)

Journal impact clusters



Quo vadis? Conclusions for future research

- Current research is clearly dominated by studies that focus interaction and communication in cmc, instructional design and learner characteristics (micro level).
- → Major gaps were found on the macro and meso level.
- The development of mainstream e-learning puts a pressing need on educational institutions for innovation and change.
→ Aspects related to educational management are of growing importance: strategy & leadership, change management and quality assurance, costs
- Many institutions are moving into the global education market to reach new target group using DE and e-learning to export their knowledge
→ Aspects related to globalization of education, cross-cultural aspects of international co-operations (macro level) and inter-cultural communication (micro level) should receive much more attention.

Thanks for your attention!

olaf.zawacki-richter@fernuni-hagen.de