



Universität Vechta
University of Vechta

Innovative Approaches and Methods of Teaching and Learning in Higher Education for Sustainable Development and Entrepreneurship

**European Conference on Educational Research 2016
"Leading Education: The Distinct Contributions of Educational Research and Researchers"
23-26 August 2016, Dublin, Ireland**

25 August 2016

*Lisa Bockwoldt, University of Vechta, Germany
Prof. Dr. Marco Rieckmann, University of Vechta, Germany*

Project CASE

- “Competencies for A sustainable Socio Economic development” (CASE)
- EU Erasmus+ Knowledge Alliances / 2015-2017
- Lead partner: Vienna University of Economics and Business
Partners: Free University Bolzano (Italy), Masaryk University Brno (Czech Republic), University Gothenburg (Sweden), BOKU - Univ Nat. Res & Life Sciences (Austria), University of Vechta (Germany), Wiener Stadtwerke (Austria), Terra Institute GMBH (Italy), Environment Center Kapraluv (Czech Republic), Ekocenter Gothenburg (Sweden)
- CASE is aiming at supporting the development of **competencies for a sustainable socio-economic development**.
- By developing **modules** for a European joint master programme on “**Sustainability-driven Entrepreneurship**”, which shall be offered to any interested European university
- One work package on **innovative forms of teaching and learning** for tackling sustainable socio-economic development in general and sustainability-driven entrepreneurship in particular
- <http://www.case-ka.eu/>

Rationale

- Competence development as a key objective of *Higher Education for Sustainable Development* (HESD) (e.g. Rieckmann 2012; Wiek et al., 2011; Barth et al. 2007)
- Need for *teaching and learning approaches* which are learner-centred and facilitate competence development (cf. Barth et al., 2007; Schaeper, 2009; Vila et al., 2012).
- Project work, service-learning, research-based learning, collaborative learning, problem-based learning, etc.
- To date, no *systematic overview* of innovative approaches and methods of teaching and learning in higher education for sustainable development and their possible effects on learners



Research Focus

- Which innovative approaches and methods of teaching and learning are used to date in higher education for sustainable development and (sustainable) entrepreneurship education?
- Which experiences have been made with using these approaches and methods?
- Which learning outcomes can be achieved – which competencies be developed?
- **aim of the literature review:** to create a systematic overview of teaching and learning methods used and recommended in the two educational fields relevant for sustainability-driven entrepreneurship, namely entrepreneurship education and education for sustainable development, in order to assess adequate, state-of-the-art teaching and learning methods for the master programme

Search strategy

All *peer reviewed* and *in English* available journal articles published with an explicit focus on

(a) "higher education" OR "university" OR "tertiary education" OR "college";

(b) "education for sustainable entrepreneurship" OR "education for sustainability management" OR "education for sustainable business" OR "education for sustainability" OR "education for sustainable development" OR "sustainability education" OR "entrepreneurship education" OR "entrepreneurial education";

(c) "didactic*" OR "pedagog*" OR "method*" OR "interdisciplinary method*" OR "interdisciplinary learning" OR "transdisciplinary method*" OR "transdisciplinary learning" OR "experiential learning" OR "experience-based learning" OR "participatory learning" OR "self-directed learning" OR "problem-based learning" OR "collaborative learning"

Search strategy

Database Search

Databases

Web of Science

ERIC

Initial Screening

Set of screening criteria for inclusion/exclusion:

- Check for duplicates
- Language: English
- Journal is peer reviewed
- Focus is on approaches and methods of teaching and learning in higher education for sustainable development and entrepreneurship

Final Sample Universe

n=183

Methodological design / sample

- Systematic and replicable search and coding strategy
- Sample of 183 articles analysed against bibliometric characteristics by researchers and research assistants (always at least two persons for analysing one article)
- Resulting sample as literature database file available for the CASE project and also for other researchers

Results: Journals

Journal	n	%
International Journal of Sustainability in Higher Education	38	20,8
Education & Training	21	11,5
Industry and Higher Education	16	8,7
Environmental Education Research	9	4,9
Sustainability	8	4,4
Journal of Education for Sustainable Development	6	3,3
Australian Journal of Environmental Education	6	3,3
Journal of Professional Issues in Engineering Education and Practice	4	2,2
Other	75	41,0

Results: Authors and Institutions

- 396 different *authors* (e.g. Paul D. Hannon, Arnim Wiek, David Rae, Katja Brundiers,...)
- 225 different *institutions* (e.g. Arizona State University, RMIT University, Aarhus University, Tokyo University of Marine Science, University of Limerick,...)



Results: Origin of the Authors

- 31 different countries

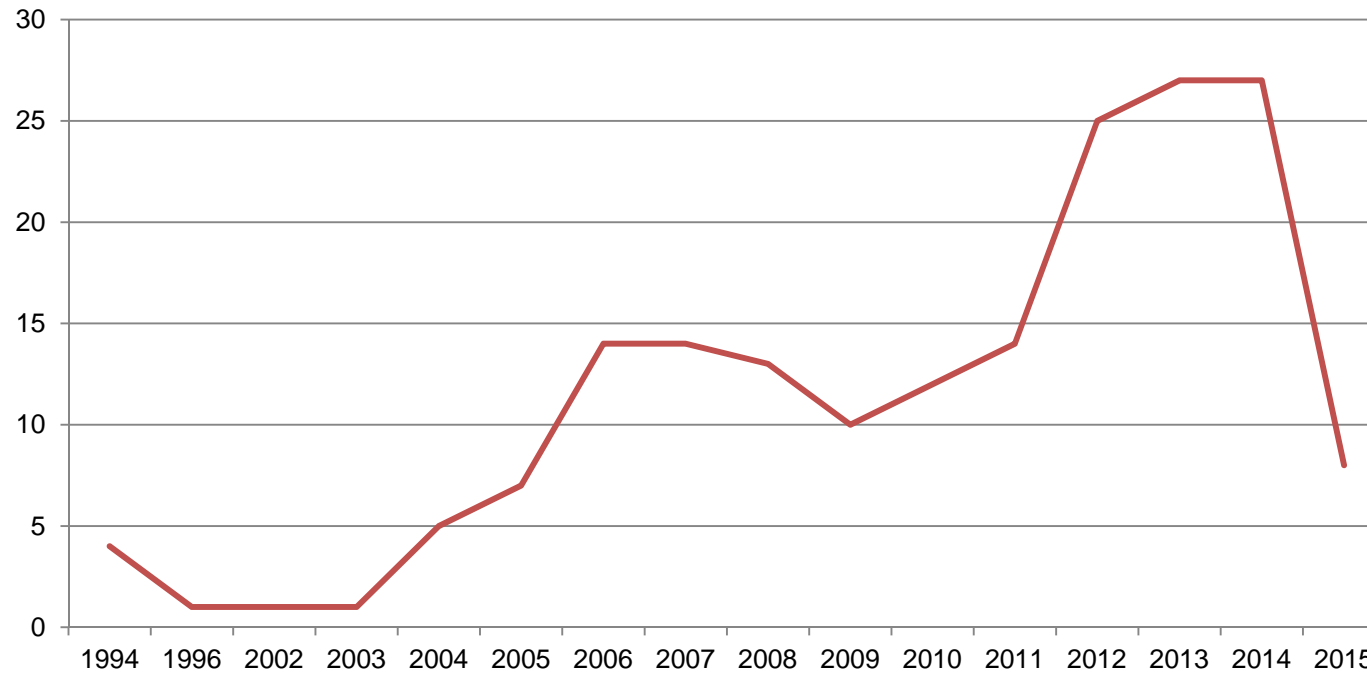
Country	n	%
USA	112	26,4
UK	92	21,6
Australia	49	11,5
Canada	15	3,5
Spain	15	3,5
Ireland	13	3,1
Japan	13	3,1
Denmark	12	2,8
Finland	10	2,4
Germany	10	2,4
China	9	2,1
Netherlands	9	2,1
Norway	9	2,1
France	8	1,9
Sweden	6	1,4
Other	16	10,1



Results: Authors' disciplines

Discipline	n	%
business, economics, management, entrepreneurship	152	36,0
environmental and sustainability sciences	111	26,3
education	76	18,0
natural, technical, computer and engineering sciences	31	7,3
humanities, social, political and cultural sciences	30	7,1
other	11	2,6
not identified	11	2,6

Results: Year of publication





Results: HESD and Entrepreneurship Education

Area	n	%
HESD	98	53,6
EE	76	41,5
None	9	4,9

Results: Type of teaching method/example

	n	%
university course	66	36,1
teaching-learning approach	64	35,0
specific method	34	18,6
other	19	10,4



Results: Pedagogical approaches

	n	%
experiential learning (EE)	147	17,7
collaborative learning	138	16,6
problem-based learning (HESD)	61	7,4
project-based learning	59	7,1
learner-centered learning (EE)	56	6,8
transformative learning (HESD)	37	4,5
reflective learning	35	4,2
real-world learning (EE)	35	4,2
place-based learning	34	4,1
social learning	31	3,7
active learning	28	3,4
service-learning (HESD)	24	2,9
interdisciplinary learning	23	2,8
traditional (lecture-based) learning	21	2,5
coaching & mentoring	16	1,9
virtual learning	11	1,3
transdisciplinary learning	10	1,2
creative learning	8	1,0
other	55	6,6

Results: Description of the teaching method/example

	n	%
Detailed description	92	50,3
Short description/overview	74	40,4
No description	17	9,3



Results: Cooperation

	n	%
none	63	34,4
mixed	43	23,5
guest lecture (EE)	30	16,4
service-learning (HESD)	9	4,9
internship	4	2,2
other	34	18,6

	n	%
none	65	35,5
mixed	41	22,4
Business (EE)	32	17,5
community (HESD)	7	3,8
university (HESD)	4	2,2
NGO (EE)	3	1,6
school (HESD)	3	1,6
entrepreneurs	3	1,6
other	25	13,7

Results: Learning outcomes

	n	%
conceptual/theoretical thoughts on LO	65	35,5
qualitative empirical analysis on LO	44	24,0
quantitative empirical data on LO	30	16,4
mixture of theoretical considerations and empirical results	25	13,7
none	19	10,4

Conclusion / Next steps

- Interdisciplinary and growing discourse on teaching and learning approaches and methods in HESD and EE
- HESD and EE use mainly active, learner-centered, competence-based teaching and learning approaches and methods, traditional (lecture-based) learning plays a minor role
- Cooperation is seen as crucial
- Rich source for teachers in HESD and sustainability-driven entrepreneurship to get inspiration and to learn from their colleagues
- The CASE project provides a [Report on Content and Methods for the Joint Master Program on Sustainability-driven Entrepreneurship](http://www.case-ka.eu) (see at <http://www.case-ka.eu> > publications)
- Further analysis of the contents of some of the papers (experiences, learning outcomes,...)
- Pilot teacher training

Thank you very much for your attention!

Contact details

Prof. Dr. Marco Rieckmann

University of Vechta

Department I - Education

marco.rieckmann@uni-vechta.de