

Environmental & Ecological Education

Specialist group "Ecological and Environmental Education"

Gesellschaft für Ökologie

Ecological Society of Germany, Austria and Switzerland

Sustainability and conservation needs public support and supporters as well. Support requires attitudes and values in order to participate within the balancing game of pressure groups. Attitudes and values require knowledge. One of the traditional tasks of education is to increase public awareness and acceptance of conservation. Educational approaches at school and in free-choice learning environments consequently deal with conservation, environmental protection and the underlying political processes. They encourage protection of the environment and conservation of natural resources. Children and young people are usually seen as promising partners to fulfil these objectives. That is why most conservation and environmental education programs target pupils of all grades. Additionally, many programs emphasize biodiversity in general and wildlife in specific because of its intrinsic and ecological values, as well as they value functions of ecosystems as a basis for teaching and outdoor experience. Consequently, in view of competing needs and pressures affecting the quality and sustainability of ecological systems, an environmentally responsible citizenship is the most crucial challenge of educational efforts. In the tradition of previous symposia within the annual GfÖ-meetings, the objective of our symposia combines theoretically based scientific approaches with existing well-tryed examples in practice. The scientific approaches preferentially will be provided as oral presentations, the practical examples will be preferentially portrayed in an overall poster presentation where a common discussion platform will provide the suitable forum. Thus, the symposium is understood as a platform where "practice meets theory" and discusses educational approaches in the field of conservation and sustainability.

35. Annual Meeting 2005 in Regensburg: Educational Symposium: Education and Nature Conservation

B. Oerke, F.X. Bogner	Adolescent general ecological behaviour and environmental values
H.-M. Haase, F.X. Bogner	Interference with environmental values
K. Hübner	Education for sustainable development – United Nations decade 2005 to 2014 supports ecological activities
H. Sturm, F.X. Bogner	How do birds fly? An educational approach of 6th graders
C. Randler, F.X. Bogner	Teaching bird identification – Cognitive achievement of group-based hands-on identification skill training
S. Schaal, F.X. Bogner	The use of Concept Maps as assessment tools in a Biological Education unit („Life in Winter“)

Example of research within environmental education:

The relation between knowledge and ecological behaviour: An analysis of the impact of valid measurement

1. Climate change: caused by human behaviour

Goal of the United Nations:
Reduction of greenhouse gas emissions down to the level of 1990 until 2012.
→ Actually industrialised countries are far from achieving this goal.

It is not sufficient to develop energy-saving technology, **we also have to change our behaviour!**

Environmental education interventions
Gain knowledge
Gain experience in nature

Aims:
→ to change attitudes
→ to develop ecological behaviour

2. Knowledge: A useful means for behaviour change?

Previous Research:

KNOWLEDGE → **ECOLOGICAL BEHAVIOUR**

→ insignificant/ only moderate relation

3. Aims:

- Analyse why knowledge's influence on ecological behaviour is underestimated systematically.
- Provide a more valid method of measuring ecological behaviour.

4. Why the influence of knowledge is underestimated

A) Different forms of knowledge:

- **Declarative knowledge:** factual knowledge, e.g. „Which factors cause the greenhouse effect?“
- **Procedural knowledge:** action knowledge, e.g. how to contribute to reduce CO₂ emissions/save energy
- **Effectiveness knowledge:** How prioritise to have low *personal costs* (money) but high *ecological benefit* (reduction of CO₂ emissions)?
→ **Choice between different behavioural alternatives**, e.g. buying a fuel efficient car vs. reduction of driving
- **Social knowledge:** e.g. about shared social expectations
→ crucial influence on ecological behaviour

All forms of knowledge have to converge towards a common ecological goal

B) Indirect impact of knowledge

The influence of knowledge is behaviour-distal = conveyed by one or more **mediators** (e.g. attitude, values, behaviour intention)
→ Some **statistical procedures** identify only direct impact (e.g. correlation)

C) Situational constraints

Situations create opportunities for or constraints to ecological behaviour, e.g.:

In **rural areas:** easier to use a compost bin,

In **urban areas:** easier to use public transport instead of going by car
→ The influence of knowledge seems to decline if there are strong situational barriers! People seem to behave inconsistently!

We need to make systematic use of differential behaviour difficulties to show that with increasing difficulty knowledge becomes more important.

5. Valid behaviour measurement

Different approaches for measuring behaviour

- **Separate measurement of behaviours from different domains:**
→ People appear inconsistent: someone recycles but does not save energy
- **General ecological behaviour:**
→ Ask for behaviours from different domains
→ One general behaviour score
→ Systematic variation of **behaviour difficulties** (ask for very easy, moderate and very difficult behaviours)

People choose ecological behaviour dependent on their life circumstances
→ **The influence of knowledge on behaviour can be assessed accurately**

6. Conclusions

1. To optimise environmental education interventions we need to know the influence of different psychological variables, like knowledge, on behaviour
2. Valid measurement is necessary for accurate assessment of this influence
 - Different forms of knowledge should be included in studies
 - Statistical procedures should be chosen that are able to identify indirect impact
 - Situational constraints should be incorporated in behaviour measurement by systematically varying behaviour difficulty

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