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## Integrating Research Instruments for the Assessment of Transformative Sustainability Learning

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### Abstract

If higher education for sustainability is to be advanced, we need to evaluate the effect of specific learning experiences on sustainability values, skills and behaviour. The Transformative Learning Theory seems to be particularly suited to capture such learning processes. There is, however, agreement in the literature that the impact of learning experiences is difficult to assess, as the course setting is only one of many aspects of the students' lifeworlds. Student biographies are not characterised by linear causalities, and even the students themselves may have difficulties identifying transformative learning moments. Moreover, studies on higher education for sustainability have been criticised for methodological weaknesses. Scholars of transformative learning in particular have questioned the ability of quantitative research instruments to capture the messy space of transformation.

We do believe, however, that those promoting novel forms of sustainability learning at universities will need efficient instruments to assess learning designs and to argue for course and curriculum adaptation. Accordingly, we developed a research instrument based on established concepts: the survey of the Graduate Study Cooperative (KOAB), the Transformative Learning Survey and the Environmental Attitudes Inventory (EAI). We then tested the instrument with 117 alumni of the International Training Course on Organic Agriculture.

The KOAB served as the basic structure and captured the characteristics and current professional position of a respondent. It also contrasted the capabilities acquired at university with the actual professional requirements. To apply the Transformative Learning Survey to a specific learning experience, we adapted the wording and reduced the number of scales to four: 1) Acting differently, 2) Cognitive/Rational, 3) Open perspectives, and 4) Social responsibility. Considering our interest in sustainability behaviour, we also integrated items of the Environmental Attitudes Inventory.

To test the factorial validity of the scales, we applied Confirmatory Factor Analysis (CFA). All CFA models showed an adequate to excellent model fit (CFI: 0.91–1.00, TLI: 0.91–1.05, RMSEA: 0.000–0.069) In addition, reliability coefficients of all scales were satisfactory to good. Despite the limitations of ex-post studies based on self-reported perceptions, we conclude that the newly developed survey instrument could become a useful tool for advancing sustainability learning.

**Keywords:** Evaluation, quantitative assessment, research instrument, sustainability learning, transformative learning