

Towards sustainable innovations

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Summary

Whilst the twenty-first century labour market requires employees that proactively shape innovations and solve complex problems, professionals in the education sector are expected to show innovative behaviour that not only entails the generation, but also the realization and sustainable implementation of new ideas.

Current IWB conceptualizations and operationalizations need further attention because prior studies proved that existing measurements miss empirical evidence of the construct validity and moreover do not include a sustainability dimension. Therefore, in *study 1* a multidimensional Innovative Work Behaviour instrument is developed and validated to measure teachers IWB. So, first items of previously used instruments were adapted and extended and new items were developed for a sustainability dimension. Second, we tested the construct validity of this newly developed multi-dimensional IWB instrument in a Dutch context, where the psychometric characteristics were examined in a sample of teachers working in vocational education (N = 440). The analysis revealed five dimensions of IWB, namely Opportunity Exploration, Idea Generation, Idea Promotion, Idea Realization (differentiated in two sub-dimensions: Criterion-based implementation and learning-based communication) and Idea Sustainability (differentiated in two sub-dimensions: External Dissemination and Internal Embedding).

This new instrument, which builds on recent conceptualizations of IWB as well as on the pivotal innovation models of West and Farr (1989) and Fullan (2007), offers a conceptually sound and valid tool to validate explanatory models of innovative teacher behaviour, and also it offers the opportunity to diagnose, in a sound way, the necessary IWB conditions for an educational innovation to succeed.

In a sample of 458 employees in Dutch secondary and higher vocational education (abbreviated in Dutch to MBO and HBO, respectively), *study 2* investigated the relation between environmental factors (namely task variety, management support and exposure to innovation) and Innovative Work Behaviour (IWB) across the different phases of the innovation process, including a sustainability phase. (Hierarchical) regression analysis showed that

management support and exposure to innovations were significantly positively related to all phases of IWB. Teachers with supportive managers and a high degree of exposure to innovations showed higher scores on innovative behaviour across all phases. There was a significant relationship between task variety and IWB. In the hierarchical regression model, only management support and exposure to innovations showed significant positive relations with IWB.

Background characteristics, such as gender, age, tenure, number of working hours and type of education, for which we controlled during the analyses, played a role in how much IWB is shown. It can be concluded that a work environment, in which employees are exposed to innovation and feel supported is crucial. Additionally, in view of the role background characteristics play, it implies that teachers' background characteristics could be taken into account when forming teams working on innovations

Given the idea of a dynamic environment, teachers are expected to show IWB, i.e. generating, implementing and sustaining new ideas. However, IWB might depend on characteristics of the work environment often referred to as learning climate. *Study 3* explores the relation between a learning climate (defined as a supportive learning environment, management support and exposure to innovation) and IWB. This study was conducted among teachers from two Dutch vocational colleges (n = 206). It is shown that learning climate significantly positively relates to IWB. More specifically, a supportive learning environment is significantly positively related to the generation of new ideas (opportunity generation and idea generation). Both management support and exposure to innovation are significantly positively related to idea generation and the implementation phases (idea promotion, realization and idea sustainability). This study provides insight into how schools can stimulate teachers' IWB. However, IWB can be studied on both an individual as well as a team level.

Sustainable innovations also demand teams with the ability to demonstrate Team Innovative Work Behaviour (TIWB). Thus far TIWB was assumed to be an iterative process and this is mostly researched among individual team members with survey-based, cross-sectional methodologies. *Study 4* aims to get more insight into how IWB occurs in teams, across various phases and how these interact, using a longitudinal qualitative approach.

A case study was conducted involving a teacher team working at a Dutch university that had to design, develop and implement a new educational module.

Team meetings were audiotaped and transcribed. For the analysis a codebook was used, based on the definitions of the five main dimensions of IWB and based on the items of the validated IWB questionnaire (Author, et al., 2020). In contrast to what was expected, the results revealed that TIWB appears to be a quite linear process instead of an iterative process wherein not all phases were detected. Idea Generation and Idea Realization were often observed but little to no attention was paid to Opportunity Exploration and Idea Sustainability. In line with theory, specific innovative work behaviours were identified per phase. This study offers more in-depth insight into TIWB process and the specific behaviours team members show in each phase. It also offers fruitful insights into how to foster the success of sustainable innovations in teacher teams.