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Gamification for Sustainable Employee Behavior

Extended Abstract for the CHI PLAY 2021 Doctoral Consortium

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CCS CONCEPTS

• **Human-centered computing** → Human computer interaction (HCI); Empirical studies in HCI; Interaction design; Empirical studies in interaction design.

KEYWORDS

Gamification, Design, Organizational Behavior, Sustainability

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Companies are challenged to contribute to sustainable development and continuously improve their sustainability performance [1–3]. Despite an increasing focus of companies on sustainability [2, 4, 5], current corporate behavior has been criticized as insufficient [5, 6]. In particular, companies seem to struggle to successfully implement and pursue sustainability goals [7–9]. One of the main reasons for this struggle might be a lack of employee commitment, as corporate sustainability efforts rely on employee participation [10]. Employees need to know and understand the sustainability goals of the company [11, 12] and change their current behavior to pursue these goals [13–15]. Previous research shows that changes in individual employee behavior significantly influence corporate sustainability performance [16–18]. However, as engagement in corporate sustainability is usually outside the scope of their duties, employees need support to work towards sustainability goals [3]. In this regard, current approaches seem to be insufficient with regard to employee engagement in behavior change [19, 20]. Thus, research is challenged to search for alternative initiatives [21].

Gamification, which is the use of game elements in non-game contexts [22], represents a promising intervention for influencing employee behavior aimed at sustainability [19, 23]. Research has increasingly shown that gamified interventions can positively influence behavior at work [24–26]. For instance, existing studies investigate the use of gamification to promote employee engagement and motivation [27–30], enhance employee training programs [31–33] and improve knowledge management initiatives [34–37].

Similarly, there is a rising research interest in gamification to encourage sustainable behavior. Research projects are investigating the effect on energy conservation in households [38–40], sustainable travel and commuting [41–43], sustainable water management [44, 45], eco-driving styles [46, 47] and recycling [48, 49].

However, research efforts are still underway with regard to the combination of these two streams, i.e. the use of gamification for sustainable employee behavior in the workplace. Although there are individual studies that use serious games [50, 51] and gamification [52–56] in office buildings, their focus is limited to energy conservation, without considering other sustainable behaviors such as water conservation, waste reduction, sustainable travel and sustainable nutrition. Hence, this thesis aims to close this gap by *designing a gameful application to promote sustainable employee behavior and measuring its effects on corporate sustainability performance*. The methodology of design-science research [57–59] is chosen as scientific approach as it is best suited for the design and construction of applicable artifacts such as systems and applications [60] and has been used in several studies developing a gamified application [61–65] (see Figure 1).

The current findings have already contributed significantly to advance scientific knowledge on gamification design both in general and in the context of sustainable employee behavior. The review and analysis of theory (RQ 2) led to the identification of ten underlying principles that help explain how gamification works [66], which support the key design principles synthesized from the gamification design literature (RQ 3) [67]. Based on goal-setting theory, the systematic review of existing research in workplace and sustainability contexts revealed which gamification dynamics are most suitable to encourage sustainable employee behavior and discussed how gamification can be designed to drive employees toward corporate sustainability performance (RQ 1) [68], but validation of this conceptual framework is still up to further research. In addition, the quantitative study on player types revealed critical insights for personalizing gamification design (RQ 5) [69]. Based on these findings, an initial prototype of the gamified application was designed and evaluated through in-depth interviews with employees, which revealed an interesting dominance of egoistic environmental values and, accordingly, a preference for gamification elements related to self-development and learning (RQ 4) [70]. Forthcoming, the second cycle aims to develop an MVP of the gamified application based on previous results and a review of employees' sustainability actions (RQ 6), and to identify any barriers that employees experience in a short-term qualitative evaluation (RQ 7). Then, in the third cycle, the design of the gamified application will be improved with respect to the aforementioned barriers, followed by a long-term quantitative investigation of the impact on corporate sustainability performance and further insights into the long-term use of different gamification elements by different types of players (RQ 8). These

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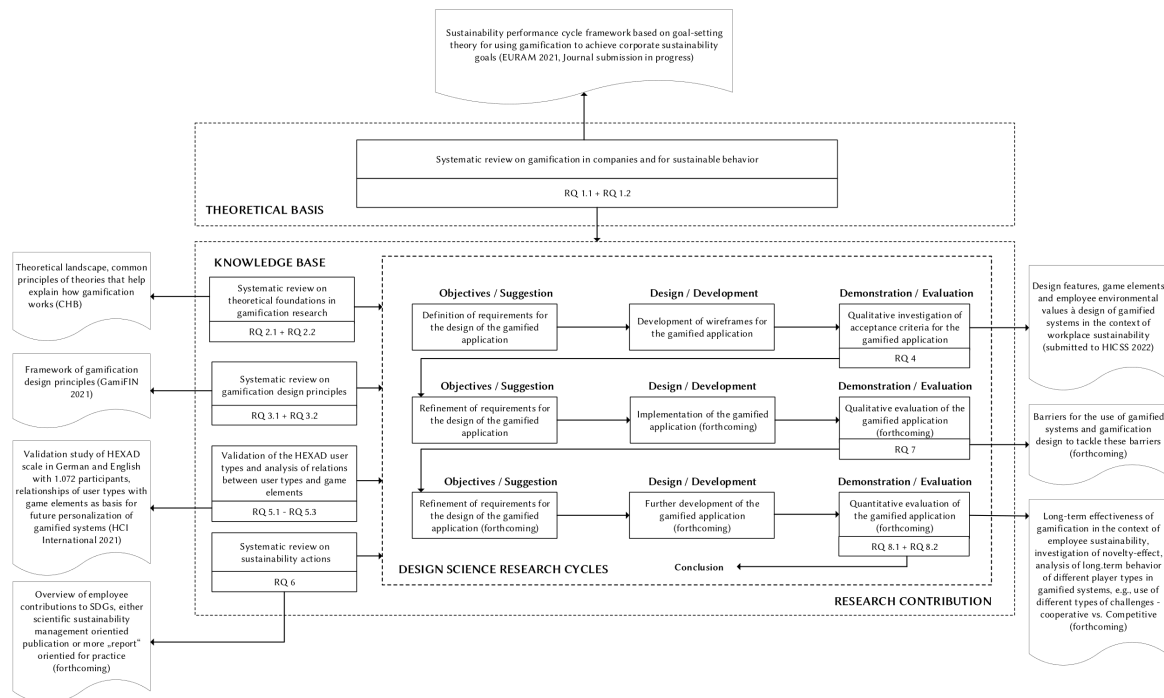


Figure 1: Research methodology together with the current and prospected research contributions (own figure)

results will not only contribute to fill the gap of long-term studies on the effects of gamification in the context of sustainable employee behavior and to investigate the influence of the novelty effect, but also support the discussion on personalized gamification design in general.

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