4 survey interfaces, N = 789
Without vs. with learning loop (LL)

Gamification

Causality Orientation
Autonomy-oriented: LL 😊
Impersonal-oriented: LL 😊

Basic Psychological Needs
LL 😍 Autonomy, 😍 Competence and 😍 Relatedness.
Gamification 😍 Relatedness.

Experience
LL 😍 Challenge.
Gamification 😍 Social experience and 😍 Playfulness.
Relatedness 😍 Social experience.
Competence 😍 Challenge.

Drop-out rate
LL 😍 gamification 😍

RQ1
RQ5
RQ3