CASE
CENTRE FOR AGEING AND SUPPORTIVE ENVIRONMENTS

Light, activity and sleep in my daily life: Design of an online intervention targeting changes to routines and the home

KIRAN MAINI GERHARDSSON, SUSANNE IWARSSON AND STEVEN SCHMIDT Dep of Health Sciences, Lund University, Sweden

Conclusions

- A two-step usability evaluation by experts in the first round and target users in the second proved valuable. It enabled refinement of the course content and significantly reduced the number of identified usability issues in the second trial with target users.
- A learning management system seems promising for use in behaviour-change interventions delivered online.
- Written university instructions for completing online course enrolment must be tailored to the target users.

Introduction

Older adults spend more time at home after retirement, and the home becomes a central place for activity. While research indicates that indoor lighting, exposure to daylight, physical activity and sleep interact to influence functioning, mood and daily rhythm, strategies are needed to promote behavioural changes to optimise these factors in daily life. The objective is to design an intervention delivered as a web-based course to encourage behaviour change related to outdoor physical activity, sleep patterns and changes to the home environment. The behaviour changes are intended to promote mental wellbeing and improve lighting and darkness conditions. The intervention strategy departs from the Information-Motivation-Behavioural Skills Model. The Technology Acceptance Model is used as a framework to evaluate usability aspects of the course content and the learning management system.

Method and materials

Qualitative and quantitative data were collected through video observations, interviews and a 10-item Likert scale questionnaire (The System Usability Scale). Scores were averaged for each participant and converted into a usability score out of 100. In a first round, three experts on, e.g. pedagogy and/or interaction design, were invited to independently assess the usability of the course content on their laptops in a full-scale model of an apartment. The setting enabled contextual interviews and video observation to identify any problems when participants experimented with the test kit included in the course material. They participated on three occasions lasting 2 hours each. Six healthy adults (aged 70–79) participated in a similar usability trial in a second round.

Findings

Experts' average usability score was 78.3, indicating "Good" usability, but the interviews revealed some issues (e.g. difficult or inconsistent terms, unclear instructions). Results were used to refine the course before the second usability trial with six participants. Participants were positive about the course, and the instructions were easy to follow. The average usability score was 86.7, indicating "Excellent" usability. Changes to the course content included, e.g. clarifying terms, the different types of text links and instructions. Unexpected issues with online enrolment in the course appeared before the second trial because university standard instructions were not tailored to the participants.

$N = 3$ → $3 \times 2\,h$ $N = 6$ → $3 \times 2\,h$

WEEK 40, 2021 | WEEK 4, 2022 | WEEK 5, 2022 | WEEK 6, 2022

P1 P1 P1
P2 P2 P2
P2 P2 P2

P1 P1 P1
P2 P2 P2
P3   P3   P3
P4 P4 P4
P5   P5 P5
P6 P6 P6

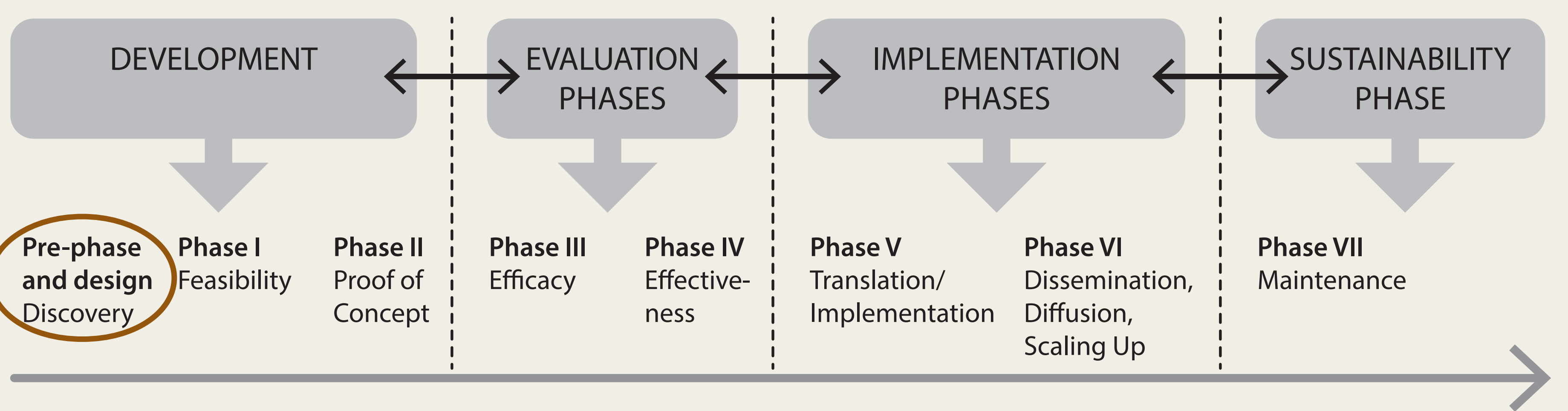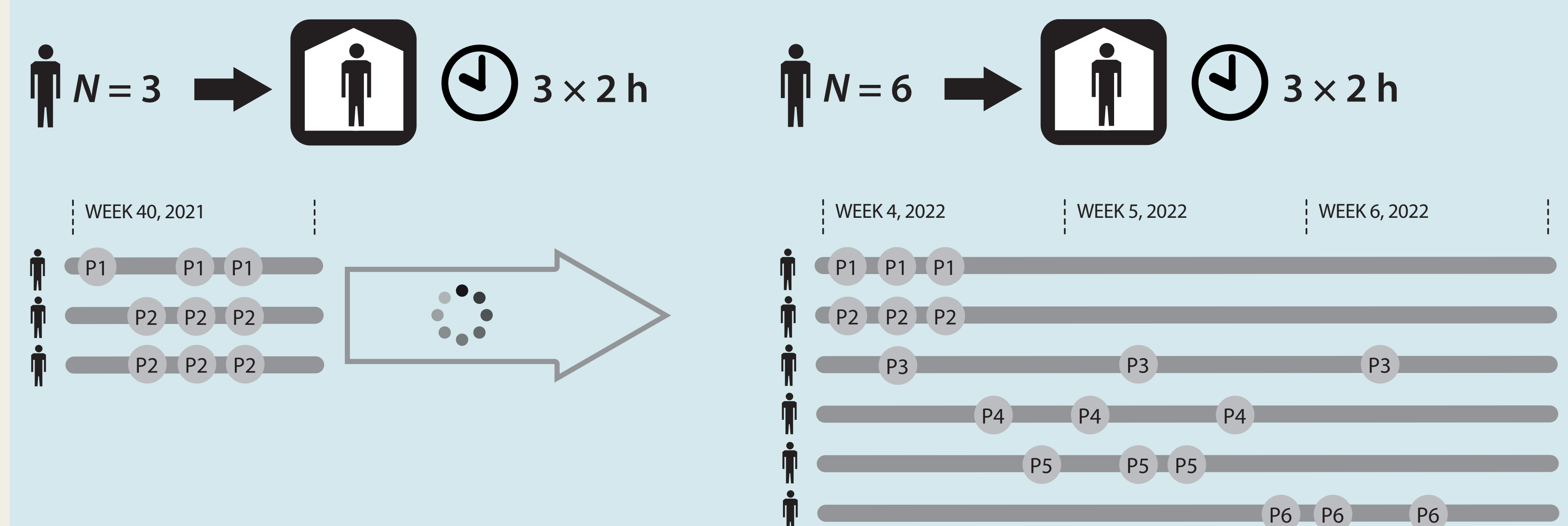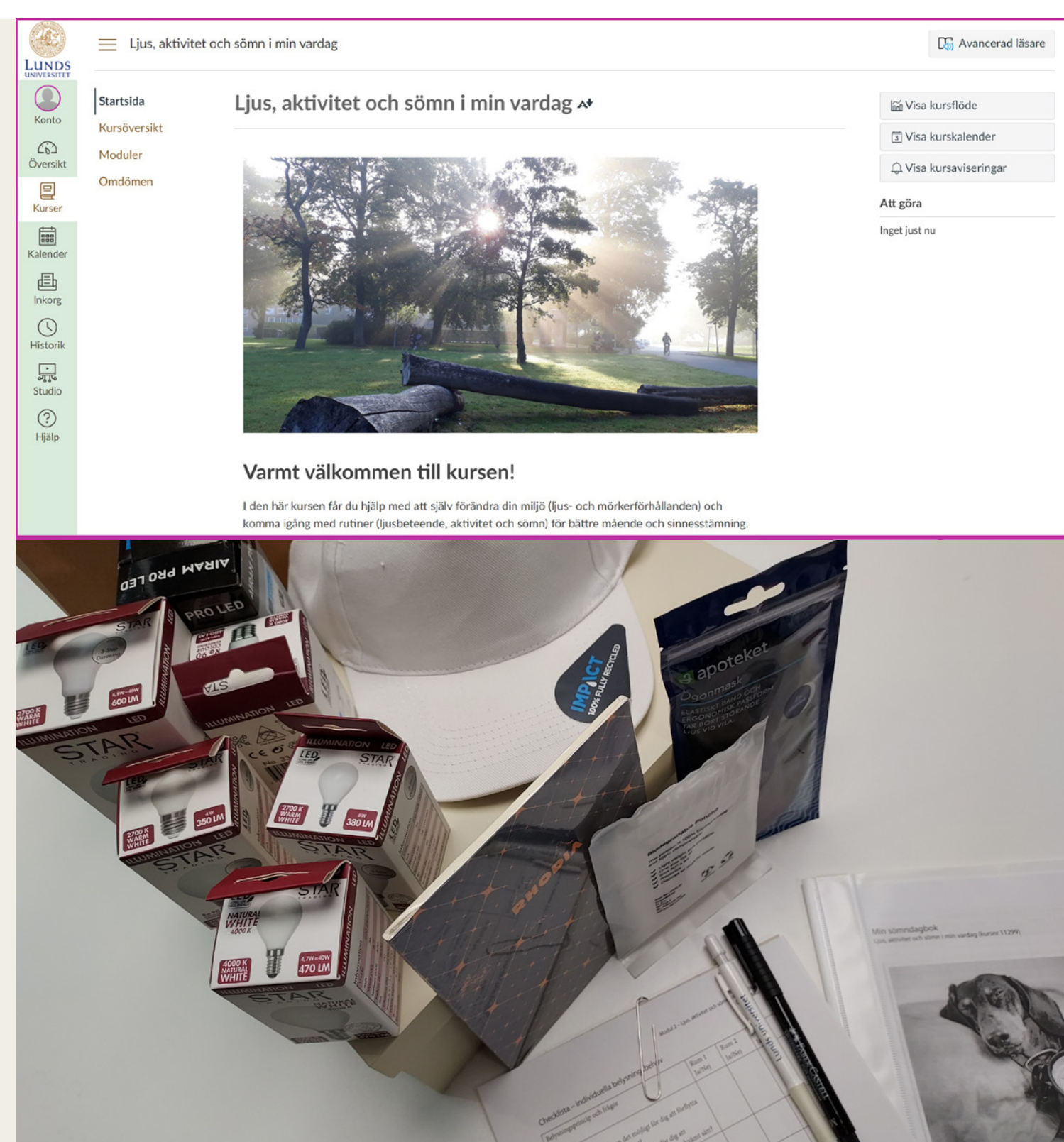| DEVELOPMENT	EVALUATION PHASES	IMPLEMENTATION PHASES	SUSTAINABILITY PHASE
Pre-phase and design Discovery — Phase I Feasibility — Phase II Proof of Concept	Phase III Efficacy — Phase IV Effectiveness	Phase V Translation/ Implementation — Phase VI Dissemination, Diffusion, Scaling Up	Phase VII Maintenance

Figure. Intervention development and actions along the pipeline