The motivational safety helmet
Redesign suggestions improving the intrinsic motivation of construction site workers to wear their safety helmet.

M.D.C. Stilma, J. de Boer, P. Lemmens, T. Beldman
m.d.c.stilma@saxion.nl, j.deboer@saxion.nl

Problem: Construction site workers are reluctant to wear their safety helmet
Q1: Why is there limited motivation to wear the safety helmet?
Q2: How to increase the motivation to wear safety helmets?

Phase 1: Qualitative usability study with construction site workers
Reflecting first ideas and analysing experiences by construction site workers. Results: first insight into durable stimuli to keep wearing the helmet.

Intrinsic demotivators
Lack of comfort, e.g. warm head during hot days

Weight of helmet
Every worker regularly bumps his head due to:
1. Extra height
2. Low hanging obstacles
3. Lacking upward vision

Bold people get hurt more often: hair as sensor

Intrinsic stimuli
Obligation to wear the safety helmet at the construction site
Knowing they are protected

Unawareness or lack of attention for certain safety issues
-e.g. the possible material deterioration of the safety helmet after impact

Phase 2: Design

Smart sensor system to detect nearby obstacles
Soft shell decreasing impact and to protect hard shell

Hard Shell
Photochromatic sun visor to improve upward view

Vibration motors warn for nearby obstacles
Headband

Positive:
+ Appreciate attention for comfort, as comfort is very important
+ Appreciate smart system
+ Appreciate photochromatic sun visor

Negative:
- Extra weight of smart system is problematic
- Penetration of sensors through hard shell decreases the strength of the helmet
- Comfort needs more attention

Further Research
Emphasis on comfort, for example a light weight sensor system, e.g. using a parking sensor system which can sense through the bumper.

Other research shows that there are several stimuli that increase intrinsic motivation, such as making it ‘interesting and enjoyable’ (Ryan and Deci, 2000). There are several reasons why people show intrinsically motivated behaviour. Ryan & Deci (2000) further describe that self determined behaviour results from ‘interest and the innate psychological needs for competence and autonomy’.


Oppportunity for the project is to connect the ‘smart helmet’ project to the Saxion safety project on the ‘smart sensor shirt’.

saxion.nl/kcdt