

Healthy by Design: Using participatory design methods to develop a healthy lifestyle intervention for vocational students

Gitte Kloek¹, Frens Pries², Fenne van Doorn^{1,3} and Sanne de Vries¹

¹The Hague University of Applied Sciences, The Netherlands

²Frens Pries | Research&Design, The Netherlands

³Delft University of Technology, The Netherlands

ABSTRACT *Unhealthy lifestyle behaviours are common among vocational students and increase their risk of non-communicable diseases later in life. Unfortunately, only a limited number of school-based healthy lifestyle interventions have been developed for vocational students. Moreover, there is no evidence that these interventions are effective. They have often been developed by professionals without involving students and therefore may not align with the target group's perceptions and needs. We used a participatory design approach to develop an intervention to promote healthy physical activity and dietary behaviours, in co-creation with vocational students. 'Contextmapping' was used to assess student conscious and subconscious motivation for a healthy lifestyle (n = 27, ages 17-26 years). All sessions and interviews were recorded and transcribed. The transcripts were analysed using framework analysis. Contextual characteristics that influenced student lives were their peers, family and short-term motives like earning money, being cool and looking good. In addition, they often had a passive attitude towards daily life, were unaware of their health illiteracy and being healthy was a goal for the distant future. These findings led to four design concepts that converged in a peer-led healthy lifestyle intervention that includes a social media campaign and activities to demonstrate and practice specific health behaviours among vocational students.*

Keywords: participatory design, healthy lifestyle intervention, vocational students

Introduction

Unhealthy lifestyle behaviours are common among vocational students (Pearson et al. 2009; Bonevski et al. 2013) and increase the risk of non-communicable diseases later in life (Bellou et al. 2018; Lee et al. 2012). Unfortunately, only a limited number of school-based healthy lifestyle interventions have been developed for senior vocational students. Moreover, there is no evidence that these interventions are effective in sustainably changing health behaviours in vocational students. In order to develop interventions that successfully change behaviour, the context of the target population must be understood. The intervention should be based on the meaningful participation of the potential users of the intervention (Bartholomew et al. 2011; Van Sluijs and Kriemler 2016).

Within the field of design research, potential users are increasingly involved in the design process in order to better meet the needs of those served through the design. Apart from evaluating design concepts through usability and prototype testing, users are also involved in earlier stages of the design process to allow them to exert more influence on the new design through idea generation and concept development (Sanders and Stappers 2012). By sharing their routines, desires, needs, dreams and fears, users provide contextual knowledge about what would best serve their needs. This knowledge is a fundamental starting point for the design process (Sleeswijk Visser et al. 2005).

This study applied a participatory design approach to developing a healthy lifestyle intervention that promotes healthy physical activity and dietary behaviours among vocational students. In this paper we describe the outcomes of the contextual user research methods to understand the behaviour of potential intervention users.

Methods

Research design

A qualitative and design-driven form of research was conducted to gain insight into the daily life and experiences of vocational students and to develop a healthy lifestyle intervention in two sequential phases. In the first phase, contextmapping was used to gain an understanding of the experiences, desires and needs of vocational students. The basic principle of contextmapping is that users are 'the experts of their own experiences' (Sleeswijk Visser et al. 2005), but this expertise lies in deeper levels of knowledge, of which users are not immediately aware. Generative techniques are used to guide users in small steps through the process of accessing and expressing these deeper levels of knowledge. Vocational students were subsequently employed as co-researchers to retrieve in-depth information from fellow students on preliminary design concepts. Co-researchers are potential users who act as researchers in the design process by gathering, sharing and enriching contextual data from the target group. Due to their position between the researcher and target group, co-researchers can gain insight into the lives of the users that would not be accessible to lead researchers (van Doorn, Stappers, and Gielen 2013).

Contextmapping

Twenty-seven vocational students (16 female and 11 male, ages 17 to 26 years) were involved in the contextmapping phase. The participants were purposefully selected from two vocational educational training programmes in an urban area of the Netherlands. They were all second-year students to ensure that they had sufficient experience with the school system, and all studied at the location where the future intervention would be tested and implemented at a later phase of the project, enabling them to remain involved in the research project.

Data generation consisted of an individual sensitizing period and a generative group session. Participants received a sensitizing booklet with exercises to observe their own daily lives and lifestyles for five days (Figure 1). Participants were reminded to do the exercises by the researchers through WhatsApp messages. The sensitizing period prepared the participants for the next step, a generative session of three hours, led by two moderators. In this session, generative techniques were used to help participants to talk about their daily life and specifically about a healthy lifestyle (Figure 2).



Figure 1 Materials from the sensitizing period and generative sessions



Figure 2 Generative session

Co-design

After the contextmapping phase, four students (1 female and 3 male, ages 19 to 26 years) were involved in the project in the role of co-researcher. These four co-researchers interviewed 17 peers (8 male and 9 female, ages 17 to 27 years) focusing on exercise and dietary habits and their intrinsic motivations in life. The co-researchers then participated in nine co-creation sessions with a researcher and designer over a period of six months. Together they reflected on the interview outcomes, worked on the creation of user types/personas and scenarios and developed intervention components. Informed consent was obtained from all participants in the contextmapping and co-design phases.

Data analysis

All materials participants generated during the sensitizing phase, generative sessions and co-research sessions were collected. All sessions were audio and video recorded and transcribed. A framework approach was used to analyze the transcripts and materials (Stappers, Sleeswijk Visser, and Keller 2015). Quotes and artefacts were selected, labelled and clustered to identify topics or issues of interest, recurrent across the data and relevant to the research question. To organize the data these topics were used to construct a framework of main themes and subthemes. Quotes that could serve as an example of the themes in the framework were translated to English.

Results and discussion

Six main themes were identified. These were: healthy/unhealthy behaviour, motivation, peers, home, passive attitude and practical mind-set (Figure 3). Subthemes that served as link between the main themes were; conscious/unconscious, appearance, being cool, context, short-term focus and knowledge.

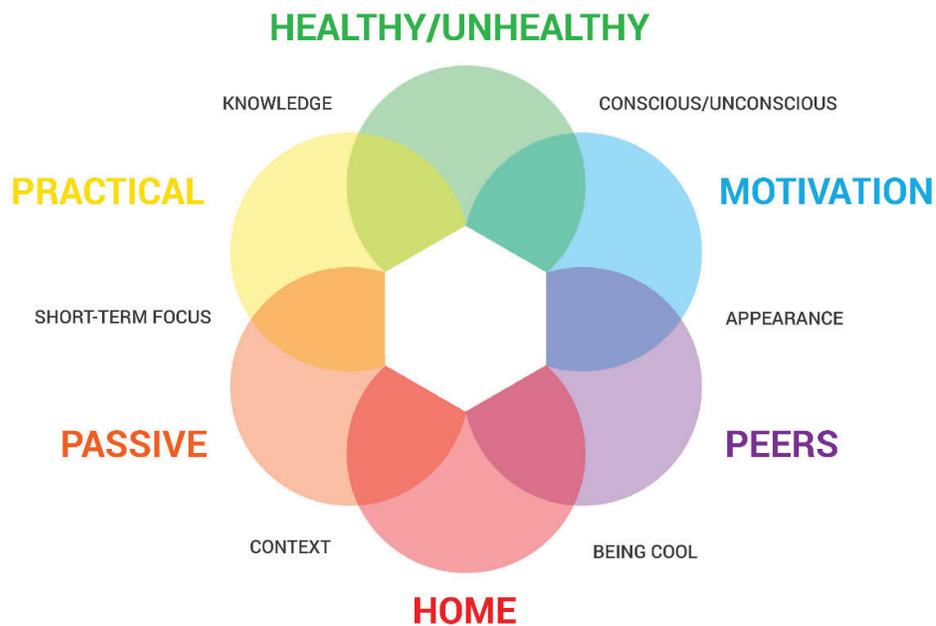


Figure 3 Contextual framework representing vocational student daily life

Healthy/unhealthy behaviour

Most participants stated that they are not focused on a healthy lifestyle and were therefore less inclined to make a conscious choice in terms of a healthy diet and actions. They often considered their health something to worry about in the (distant) future. Participants stated that their thoughts were along the lines of: ‘My body is not that unhealthy now, so why worry?’

It would be another matter altogether if I were fat, but I’m not. So, it doesn’t matter.
(Participant 20)

Even if they wanted to become healthier or more fit, they felt that they often lacked the means and knowledge to make lasting changes to their lifestyle. They also observed that unhealthy food was readily available, either at school or at home.

You intend to eat a small burger, but that usually turns into an entire menu because it is so tempting! (Participant 26)

Motivation

Participants mentioned that looking good and being similar to peers are very important to them, partly because they think it affects their popularity. Not being overweight seems to be one of the most important factors. When asked, the motives mentioned most often for not exercising or eating

healthily were a lack of time or clearly structured agenda, costs and access to exercise facilities and the fact that eating healthily is not considered 'normal'. Moreover, even if you want to eat healthy, peer pressure often gets in the way. Motives to exercise or eat healthily were belonging to a group/doing this together and the fact that being physically active gave them energy and a way to relieve stress.

Peers

Most participants try to be among their peers constantly; their phone seems to be an extension of themselves and is part of their social world, as it grants them access to friends even when they are not physically around. Participants said they know they can be influenced by others but, at the same time, observed that they do not act against peer pressure. If one of the group members is tempted to eat something unhealthy, others often join in, even though they might not feel like it at first.

Eating healthy became quite difficult for me because the others sometimes persuade you to go to McDonalds, KFC, etc. (Participant 25)

Eating unhealthily, drinking alcohol and using drugs were perceived as being cool by most of the participants. According to them, it showed that you do not care about later or what others think.

Home

Most participants lived with their parents and were accustomed to the fact that someone took care of them. However, they often ate alone. Parents were one of the driving factors behind the eating habits of the participants, not only because they usually cooked, but also because parents taught them what 'good' food is. Most participants seemed to think that what their parents cooked for dinner was 'healthy'.

You eat dinner with your mum, right? So it's got to be healthy! (Participant 23)

In many situations, the context seemed to determine how the participants behaved. When at a party, they said it was normal to drink and eat unhealthily and they felt it was uncomfortable to reject cake or drinks. They mentioned two important reasons: not wanting to be different and not wanting to be seen as no fun or not cool.

Passive attitude

Most of the participants felt as if life was something that happened to them. If something did not go the way they wanted, they often felt it was someone else's fault. Or they said it was just the way things were, not something they could influence. In several examples this caused the participants to give up early on and not even try to solve their problems. Furthermore, most participants thought themselves to be a doer instead of a thinker and therefore did not like to give things much thought in order to understand them.

I knew I was going to end up in a low-level vocational education training programme, so I thought, fine, then I won't make an effort since it won't make a difference anyway. (Participant 21)

Practical mind-set

Information and classes only seemed of interest to the participants if they understood what they can do with the content in the short term. They mentioned that they prefer practical sessions over theory classes. The same attitude applies to a healthy lifestyle: terms like 'healthy' and 'too much' are too vague to understand. They seem to prefer absolutes such as 'no added sugar' or going to soccer practice on Tuesdays and Thursdays from 7 pm - 8 pm instead of 'exercise for one hour or more twice a week'.

Relating emergent themes to existing literature

Important contextual characteristics that influenced vocational student lives were their peers, family and short-term motives like being cool and looking good. Furthermore, they often experienced a passive attitude towards daily life, were unaware of their health illiteracy and being healthy was a goal for the distant future.

These contextual characteristics are also described in several studies involving young adults. Young adults are described as having an external locus of control, not thinking about their own actions and being passive or lazy in nature. Furthermore, they show that young adults use incorrect knowledge, believe in myths or do not always understand everything when it comes to health behaviour guidelines. The individual behaviour of young adults seems to be influenced by prevailing social norms which may lead to either healthy or unhealthy behaviours, depending on the norms (Boyd and Braun 2007; Cha et al. 2016; Giles and Brennan 2015).

Design concepts

All in all, the findings from contextual user research provide a greater degree of depth with regard to existing literature and programme theory (Kremers et al. 2006), enriching the assumptions on the environment-behaviour relationship. We combined these insights into four design concepts:

Firstly, involving senior vocational students as advocates of a healthy lifestyle. Younger students may be influenced by these senior peers to change behaviour.

Secondly, increasing the knowledge of students through social media and posters with simple tips and brief messages focusing on practical information and not directly on changing behaviour.

Thirdly, focusing on the motivation and short-term benefits of their interest, such as earning money, being cool and looking good, and linking this to healthy behaviours. Acting on these motivations may have an indirect effect on health behaviour.

Fourthly, creating a healthy school environment, both with regard to appearance in terms of the available food as well as activities that are already carried out as part of a health-promoting school

approach (Bartelink and Bessems 2019). Students agree that unhealthy foods should not be sold at school.

Limitations

In qualitative case studies an important indicator of quality is validity, entailing both internal and external components (Bryman 2012). In this study, internal validity is achieved by triangulating the findings using more than one source of data and by involving at least two researchers in every step of the analysis. External validity is promoted by including different groups of vocational students from two different vocational education training programmes in the study. However, the insights acquired through the research are local and primarily serve intervention development and cannot be generalized to other areas without further research.

Conclusions

The contextual user research methods resulted in rich insight into the experiences, desires, needs and motives for the healthy lifestyle choices of 16 to 27-year-old Dutch vocational students. Based on these insights, the following four design concepts evolved: promoting health as a by-product of activities aimed at student short-term motives, increasing health-related knowledge through social and other media, involving senior students as role models and creating a healthy physical school environment. These concepts converged in a peer-led healthy lifestyle intervention that includes a social media campaign and activities to demonstrate and practice specific health behaviours among vocational students.

Practical implications

This paper describes the first steps in the process of finding meaningful design directions conducted by a multidisciplinary team that worked iteratively towards the development of a lifestyle intervention targeting vocational students. The team consisted of design and health promotion researchers, each with different expertise and approaches. A combined insight emerged from the rich qualitative contextual user data and existing theoretical frameworks for health behaviour change.

Acknowledgements

The HbD project was funded by The Netherlands Organisation for Health Research and Development (ZonMw project number 531001111). We wish to thank Astrid Bontenbal for her contribution as a researcher at the Delft University of Technology in the contextmapping and co-design phase.

References

Bartelink, N, and K Bessems. 2019. "Health Promoting School in Europe. State of the art." In. Maastricht, The Netherlands: Schools for Health in Europe.

Bartholomew, L Kay , Guy S Parcel, Gerjo Kok, Nell H Gottlieb, and Maria E Fernandez. 2011. *Planning health promotion programs: An intervention mapping approach (3rd ed.)*. San Francisco, CA: Jossey-Bass.

- Bellou, Vanesa, Lazaros Belbasis, Ioanna Tzoulaki, and Evangelos Evangelou. 2018. "Risk factors for type 2 diabetes mellitus: An exposure-wide umbrella review of meta-analyses." *PLoS one* 13:e0194127-e. doi: 10.1371/journal.pone.0194127.
- Bonevski, Billie, Ashleigh Guillaumier, Christine Paul, and Raoul Walsh. 2013. "The vocational education setting for health promotion: a survey of students' health risk behaviours and preferences for help." *Health Promotion Journal of Australia* 24:185-91. doi: 10.1071/HE13047.
- Boyd, Jamie K, and Kathryn L Braun. 2007. "Supports and barriers to healthy living for Native Hawaiian young adults enrolled in community colleges." *Prev Chronic Dis* 4 (4):A88.
- Bryman, Alan. 2012. *Social research methods (Fourth edition)*. Oxford: Oxford university press.
- Cha, EunSeok, James M Crowe, Betty J Braxter, and Bonnie Mowinski Jennings. 2016. "Understanding How Overweight and Obese Emerging Adults Make Lifestyle Choices." *Journal of Pediatric Nursing* 31 (6):e325-e32.
- Doorn van, Fenne, Pieter Jan Stappers, and Mathieu Gielen. 2013. Design Research by Proxy: Using Children as Researchers to gain Contextual Knowledge about User Experience. Paper presented at the SIGCHI Conference on Human Factors in Computing Systems CHI '13.
- Giles, Emma Louise, and Mary Brennan. 2015. "Changing the lifestyles of young adults." *Journal of Social Marketing* 5 (3):206-25.
- Kremers, Stef PJ, Gert-Jan De Bruijn, Tommy LS Visscher, Willem Van Mechelen, Nanne K De Vries, and Johannes Brug. 2006. "Environmental influences on energy balance-related behaviors: a dual-process view." *International Journal of Behavioral Nutrition and Physical Activity* 3 (1):9.
- Lee, I-Min, Eric J Shiroma, Felipe Lobelo, Pekka Puska, Steven N Blair, Peter T Katzmarzyk, and Lancet Physical Activity Series Working Group. 2012. "Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy." *The lancet* 380 (9838):219-29.
- Pearson, N., A. J. Atkin, S. J. Biddle, T. Gorely, and C. Edwardson. 2009. "Patterns of adolescent physical activity and dietary behaviours." *Int J Behav Nutr Phys Act* 6:45. doi: 10.1186/1479-5868-6-45.
- Sanders, Liz, and Pieter Jan Stappers. 2012. Convivial design toolbox: Generative research for the front end of design: BIS.
- Sleeswijk Visser, Froukje, Pieter Jan Stappers, Remko Van der Lugt, and Elizabeth BN Sanders. 2005. "Contextmapping: experiences from practice." *CoDesign* 1 (2):119-49.
- Stappers, Pieter Jan, Froukje Sleeswijk Visser, and Ianus Keller. 2015. "The role of prototypes and frameworks for structuring explorations by research through design." In *The Routledge companion to design research*, edited by Paul Rodgers and Joyce Yee. New York: Routledge.
- Van Sluijs, Esther MF, and Susi Kriemler. 2016. "Reflections on physical activity intervention research in young people—dos, don'ts, and critical thoughts." *International Journal of Behavioral Nutrition and Physical Activity* 13 (1):25.