The role of UX in designing technologies for teenage healthy lifestyles

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Abstract
The design and development of technologies for health management is a complex process, whereby the needs the needs and preferences of users have to be aligned with health benefit. This paper presents a case study for designing for a specific user population – teenagers. It describes some of the challenges of designing for this population and why UX provides a suitable process for designing technologies which are specifically designed for young people and their management of healthy living.

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Teenagers; healthy living; technology; design methods; psychosocial development.

ACM Classification Keywords
D.2.1 Requirements/ Specification [D.3.1]; H.1 Models and Principles; H.1.2 User/Machine Systems [Human Factors]; H.5.2 User Interfaces [User Centred Design]; J.3 Life and Medical Sciences [Health]

Introduction
Promoting healthy living in teenagers is a difficult task to achieve as there are a number of developmental and biopsychosocial factors which can be at odds with this goal[1]. Developing technologies to support these

behaviors is therefore a challenging research agenda but which can provide a potentially valuable service and product if successful.

Managing a healthy lifestyle is ideally done in a pervasive, holistic manner and is in line with Birchers description of health as "a dynamic state of well-being characterized by a physical and mental potential, which satisfies the demands of life commensurate with age, culture, and personal responsibility."[2] User Experience (UX) provides a tool from which to approach the challenges of designing technologies to address a broad subject such as 'teenage healthy living', encompassing "all aspects of the end-user's interaction with the company, its services, and its products."[3]

This paper presents some of the lessons learnt from a research project investigating technologies for teenage healthy lifestyles. It describes why UX provides a suitable process for designing technologies which are specifically designed for young people and their management of healthy living.

Teenage health behaviors and development

There are three subsections within the adolescent years and teenagers can be broadly categorized within early (10-14 years old), mid (15-17 years old) and late (18-20 years old) adolescence[4]. These categories roughly correspond to the stages of development and behavioral change seen within teenagers, however even within these categories there is wide inter and intra variability to be considered[5].

Spanning these age categories, teenage health behaviors are subject to dramatic change during the adolescent years and are influenced by the following factors[1],

Psychological development; the development of abstract thinking; appreciation of long term impacts of immediate and short term behavior; development of identity.

- Social development; increasing autonomy away from parents and peer orientation; splitting of peer groups into smaller groups and couples,
- Physical development; puberty and development of body image.
- Risk taking behaviors associated with cognitive and social development during adolescence.

Why UX?

The specific nature of change and development which occurs throughout the teenage years provides a unique and challenging backdrop for designers and developers of technologies which are to be used during this dynamic period.

Utilizing a UX approach is appropriate as one of its main remits is to meet the exact needs of the user. As is evidenced by the literature into the developmental and biospyschosocial domains of adolescence, it is likely that teenagers' needs will change as the individual develops and matures. Subsequently a holistic view of these years and their characteristics is required so that requirements elicitation and formative user testing can encapsulate the requirements of this population.

There is also the issue of discovery in contextual design. Teenage health behaviors and needs may be explicit or implicit. As such understanding the context of their motivations and subsequent actions through UX processes may improve understanding whilst informing technology and system design. Conversely context discovery may also disclose issues which may be detrimental to maintaining a healthy lifestyle and so resilience to these factors can become part of the technology device.

Technologies for teenage health

Increasingly technology solutions are being used to improve our professional and personal lives. Technologies for healthy living comprise a huge range of hardware and software options including but not limited to,

- Wearable sensors
- Smart phones
- Mobile apps
- Online content
- Serious gaming applications
- Promoting healthy behaviors

At the same time, the population of young users of technologies is rising and they utilize these products for a multitude of personal and social purposes[6]. Can the motivations, enjoyment and pervasive use of technology by teenagers in general be better understood and designed to involve the topics of health and wellbeing?

Why UX?

A key element of UX is the successful use and enjoyment of a system or product by the user; in addition to the technology meeting the objectives of the developers and/or organization. UX employs a variety of methods to ensure that affective measures as well as product purpose are met to ensure personal acceptance of the system.

One description of UX is of "a person's perceptions and responses that result from the use or anticipated use of a product, system or service"[7]. This has particular relevance for the design and manufacture of technologies for health management which have the objective of modifying poor health behaviors whilst supporting positive ones. It is important in the context of designing technologies for long term health management that the design process considers not only the momentary emotions of interacting with the system, but also understands the relationship of the user with the technology over time. Including how it can evolve and what measures and developments can assist in assuring longer term use of the product for improved health benefit. Technology devices, services and supporting online content have potentially numerous tasks to achieve,

- Supporting healthy behaviors being exhibited
- Initiating and promoting behavior change for improved healthy living
- Engage young users not just in the short term but over months and years

GUIDANCE SERVICES FOR OPTIMISING LIFESTYLE IN TEEN-AGERS.

The PEGASO project will develop a multi-dimensional and cross-disciplinary ICT system to influence health behaviors in teenagers by encouraging them to become co-producers of their wellness and take an active role in improving it by:

*Generating self-awareness

*Enhancing and sustaining motivation to take care of their health

*Changing behavior towards a healthy lifestyle based on healthy diet and adequate physical activity.

The PEGASO system framework will address prevention, by offering to teenagers three main functionalities:

*Individual & Environmental Monitoring

*Feedback System and personalized healthy modification of lifestyle

*Social connectivity and engagement through community networks and gaming.

- Being socially acceptable so that the uptake of devices and services does not carry stigma
- Facilitate peer support. As teenage years are a time of change whereby influence from parents decreases and peer influence increases, the system should encourage support and networks with people who chose by the user.

Knowledge of this is particularly significant when coupled with the knowledge of teenage developmental stages and how health promotion in teenagers can be achieved.

Expectations and cultural influences

"Popular culture and the media represent adolescents in association with varied examples of risk taking and anti-social behaviors" leading to cultural bias and stereotypes about teenagers[8]. Some assumptions may stem from genuine theory about teenagers however some may also be speculative. It is important that cultural assumptions and societal views are not the 'evidence' from which design processes and decisions are made. This situation can lead, at best to a poor uptake of a system/technology or at worst the development of a platform for healthy living which inadvertently engages young people to actively pursue negative health behaviors in a bid to assert their growing autonomy.

Why UX?

This is where a UX approach from the start of a design process is so important. When designing with a full appreciation of UX and the user population as the focal point of all developments, preconceptions and expectations will have minimal influence on the process and outputs. Methods used to engage young participants can work towards breaking down cultural and societal assumptions so that valid requirements gathering and iterative processes can work towards solutions which target what adolescent users want and like and not what society or adults believe adolescents want or like.

Conclusions

User Experience with and for teenagers provides a valuable tool for engaging young users in a design process from beginning to end. This paper describes its specific use in designing technologies for teenage healthy lifestyles and how a UX approach can overcome some of the challenges and barriers associated with researching and designing for the health and wellbeing of teenagers.

UX processes are made all the stronger by the potential for multi-disciplinary contributions and multi-method approaches. An aspect which is good for engaging young populations with wide intra and inter variability and eliciting an accurate and in depth understanding of said population. As such the role of UX in designing technologies for teenage healthy lifestyles provides a holistic approach for which long term technology appropriation is made all the more possible.

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