Application of a theory-based method in educational programs for designing persuasive eHealth: A Dutch experience

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1 Introduction:

eHealth applications for self-management are dramatically changing the way healthcare is provided and organized1. There is a gap between the theories used to develop self-management systems to support patients and healthcare consumers and a practical approach to help healthcare informatics professionals to adopt evidence-based practices2.

In the context of healthcare informatics educational programs available in the Netherlands, little attention is given to designing effective persuasive applications. We propose an integrated, systematic and practical but scientifically based methodology to design effective persuasive applications. The integrated approach has been developed from a didactic and educational perspective and is being currently embedded in our Healthcare Informatics master program.

2 Methods

The proposed integrated methodology makes use of existing models in the areas of eHealth development, persuasive design, and behavioral change (see Figure 1). The
CeHRes roadmap\(^3\) that is used provides general guidelines on the steps to take in designing eHealth applications. Using the roadmap as a basis, we make use of two models in order to explicit the aspects of behavior changes and persuasion important in designing dedicated eHealth applications. The model of Oinas-Kukkonen\(^4\) includes principles for persuasive design which allows to define the persuasive context, and to describe the targeted users, their goals, intentions and technology use. The principles are applied in the first three phases of the roadmap namely contextual enquiry, value specification (scenarios and requirements) and design.

The Fogg Behavior Model\(^5\) shows that three elements must converge at the same moment for a behavior to occur: Motivation, Ability, and Trigger. When a behavior does not occur, at least one of those three elements is missing. The Behavioral grid is used during the CeHRes phases of value specification and design.

![Figure 1: Integrated approach](image)

### 3 Results

The proposed integrated approach is being applied for the module Persuasive design of eHealth within our Master program Advanced Health Informatics Practice (MAHIP)\(^6\) at Inholland University of Applied Sciences. Students learn how to create a conceptual
design of an eHealth application using the integrated approach. This eHealth application must involve a patient-centered design and one or more (health)care interventions. During the past three years several persuasive designs of eHealth applications have been developed by our master students. This includes for instance eHealth applications to promote a healthier lifestyle of youngsters with weight problems, to support monitoring and self-management of pregnant women with a heart condition, to support children with syringe anxiety, to support communication of patients on an oxygen support at the ICU.

4 Discussion

The choice of the models for the integrated approach has been driven by their sound foundations as well as their practical usability in a teaching setting. To our knowledge, this integrated approach is a novelty (certainly in the Netherlands) within an educational context. Furthermore, it can be viewed as complementary to other current approaches such as design thinking. The integrated approach provides a number of didactic functions. As a cognitive function, it helps students first of all to understand and learn basic concepts of the eHealth development process, of persuasive design and behavioral changes. The formative function includes acquiring the skills to use these basic concepts. The module is often an eye opener for students: Designing an eHealth application is more than just designing an interface. With regards to best practices, an eHealth application that is being successfully used and implemented is too often seen sufficient to be defined as best practice. However, persuasive design is one of the components for the best practice which may or may not be accounted for when defining it. We argue that persuasive design for eHealth should be a more visible aspect of best practices. Visibility via educational programs and transferability through educated healthcare informatics professionals are means that we advocate.

5 Conclusions

Our proposed integrated, systematic and practical but scientifically based methodology aims at bridging the gap between theory and practice in designing persuasive eHealth applications. It has been developed from a didactic and educational perspective and is being implemented in our master program. It enables our master students to design user-centered persuasive eHealth applications. This work might inspire educators on how to teach design of persuasive eHealth applications and support development of best practices in this area.

References

1. L. Alpay, O. Blanson Henkemans, W. Otten, T. Rövekamp, A. Dumay, E-health applications and services for patient empowerment: Directions for best practices in the Netherlands,