The Space of Digital Health Games

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Abstract
Digital health games run increasingly on mobile devices in order to stimulate and maintain health related behavior change. Yet, they interact with their topographic, social and cultural context in various ways and to specific degrees. In this article we discuss theories on locative media, urban as well as pervasive game design and set them in relation to current health game practice. Two approaches in “mobile persuasion” are contrasted: While some research emphasizes the transfer of newly learned behavior by providing a seamless experience, others focus on the collision between game rhetoric and “real world” context. Between the two, we argue, a “Situationist” approach may highlight interaction with everyday objects and environments as key to behavior change. We construct a new typology of game locations and give an overview into what we call “locative health games”. Gaining a deeper insight to the role of space in digital health games, we claim, helps to address wider cultural implications and may well unfold new possibilities to leverage health messages. In conclusion, we present our concept for a mapping game, in which we interrogate how interacting with everyday environments may motivate young diabetic users to document their daily disease management.

LOCATIVE MEDIA, URBAN DESIGN, MOBILE PERSUASION, PERVERSIVE GAMING, DIABETES GAME

Introduction: Possibility space

Persuasion has been defined as “an attempt to change attitudes or behaviors” with special emphasis given to users’ voluntary participation (Fogg, 2003, p. 15). Computers, it has been argued, can be particularly persuasive when they make use of ubiquitous and mobile technologies. Potentially, they can intervene at any time and any place and may therefore find the opportune moment for present health related messages (Fogg, 2003, p. 10). We have shown elsewhere that health games seem to explore mobile technologies in various ways and so far to specific degrees. Mobile exergames – designed to produce physical activity in its players - seem to address a wide range of gameplay activities, pervasive gaming strategies and involve various real world locations. Meanwhile, disease management games seem to be concerned with more specific building blocks such as simulating self-care and gaining health related knowledge. They are being mostly developed for domestic use and so far these games only minimally interact with their built and social environment (Knöll & Moar, 2011). Several research projects are...
currently investigating the role of persuasive and mobile technologies in health related behavior change. Dealing with nutrition and eating habits, for instance the game project *Time to Eat* (Pollak, Gay, Byrne, Wagner, Retelny, & Humphreys, 2010) indicates that the spectrum of potential applications may go well beyond the already established field of exercise games.

In this article, we follow the argument that new “possibility spaces” of serious games - and health games in particular – can be explored by experimenting with a wide range of design inputs (Sawyer & Smith, 2008). Broadening the discussion to the disciplines of locative media and urban design theory may help to illuminate how digital health games can interact with their spatial, cultural and social context. We identify several patterns that seem to occur in current design practice, from which we construct a new typology of “real world” health game locations. We go on presenting a framework of what we call “locative health games”, which invites consideration about how games may use such locales in order to improve their overall experiences and achieve their health related goals. We conclude with the concept of a mapping game, which illustrates how playful interaction with objects and environments aims to motivate young diabetic users to document their daily disease management.

Space, we argue, may take on a twofold role in digital health games: First, it contributes to gameplay activities, which, for instance are designed to produce health related data input. Second, it may leverage health related behavior change exactly by raising users’ awareness for environmental influences on their wellbeing. In the following section, we like to contrast two opposing approaches to space within persuasive theory: One seeks to integrate interactive simulations into the real world while the other aims for a collision between game rhetoric and urban context.

**Mobile Persuasion: Seamless experience vs. simulation gap**

Some health game research emphasizes how to transfer newly learned behavior from simulated environments to real world situations. Late 1990s studies have pointed to the role of self-efficacy beliefs in the context of videogames for health. They show that users, having rehearsed health related activities and knowledge in a simulated environment feel more confident with the newly learned content. As a result, they are more likely to apply such behavior in their everyday lives later on (Lieberman, 1997, p. 112). In order to increase such a likelihood, BJ Fogg seems to suggest to level down the spatial boundaries between simulations on the one hand and real world environments on the other. He argues, simulations embedded into everyday objects become particularly persuasive, since they would be less dependent on users’ imagination and suspension of disbelief (Fogg, 2003, p. 77). Fogg insists the process of persuasion must be done overtly - otherwise, it would not only become morally ambiguous, but ineffective, too. In order to stimulate behavior change, users must be aware of the process of persuasion (Fogg, 2003, p. 48). This, of course, may be read as an appeal to designers to find ways of indicating and symbolizing persuasive technology being at work within objects and environments. In order to contrast what we call a pervasive approach to persuasive technology, we need to emphasize Fogg’s claim for simulations to migrate into familiar objects and environments (See table 1). Elsewhere, he highlights the concept of “augmented reality” and its potential for behavior change by layering digital content over existing physical structures. What foremost seems to matter to him about “mobile persuasion”, is the question of “what gets added to your world” (Fogg, 2007, p. 10). In
this notion, pervasive approach to mobile persuasion relies deeply on location and context awareness. Yet, it seems not to consider interaction or alteration of the material environment as a further possibility to stimulate and maintain behavior change.

Bogost counters with an observation on what he calls “mobile persuasive games”. Like Fogg, he points to the importance of delivering digital rhetoric as close as possible to its real world context. Nevertheless, he points out Fogg’s “psychological” approach would seek to integrate simulation into the simulated real world. Fogg’s persuasive technologies would follow the “ubicomp influenced dream” of seamless and immediate experiences (Bogost, 2007b, p. 32). Bogost, in contrast, wants to advance a different and as he suggests more artistic approach to persuasion. Elsewhere, he argues that players may be persuaded precisely through what he calls a “simulation gap”. The latter, he explains, occurs between a worldview expressed by a game designer and the worldview already held by players. For Bogost, interacting with a persuasive game ideally would stimulate an inner “state of instability”. The resulting “simulation fever”, as he hopes, might well leverage players to rethink established opinions and attitudes (Bogost, 2007a, pp. 214). As he specifies for mobile persuasive games, there would be a further possibility to stimulate behavior change. Next to providing a most seamless experience, he states, designers may seek to collide game rhetoric and real world setting. In order to do so, he likes to recall “defamiliarization” - an artistic technique, which would compel the viewer to see the ordinary in a new and unfamiliar way (Bogost, 2007b, p. 36). Bogost seems to draw on an artistic tradition here, which has been highly influential on urban designers from the 1950s and 1960s onwards. To briefly revisit these theories helps to clarify Bogost’s rhetoric persuasion and serves as a starting point for what we like to highlight as Situationist approach.

The Situationist approach: Subjective mapping

We may note in passing that the belief in environmental change for improving individuals’ opportunities was central to many social and urban reformers of the early 19th century. Indeed, it contributed extensively to the birth of today’s discipline of scientific town planning (Benevolo, 1967). Hillier’s “configurational theory” for instance has set out to broaden our understanding of how spatial layouts of cities and buildings influence people’s movement and social interaction (1996). James, Jackson-Leach & Rigby recently have observed a growing interest in the environmental causes for lifestyle diseases such as obesity. For them, town planning and urban design with their capabilities in motivating physical activity and influencing food intake may be one ray of hope for tackling the disease (2010). Robertson-Wilson and Giles-Corti review various studies, which link neighborhood design attributes such as population density, mixed land use, connectivity to the so-called “walkability” of living areas. They conclude there would be “promising evidence” that the way we build cities may influence its inhabitants’ weight status (2010). Initially, 1960s artist groups such as the Situationist International (SI) likewise considered material change as key to stimulate wider cultural and political change (Sadler, 1998, p. 13). What Bogost describes as defamiliarization, can be seen more radically - as techniques of rerouting, hijacking or misappropriation of the society’s pre-existing aesthetics for artistic purposes (Sadler, 1998, p. 17). It has been observed that Situationists explored state of the art technologies and were particularly concerned with the practice of urban geography. Their maps of personal “drifts” through the city did aim to criticize existing structures, but also attempted to enhance the experience of everyday life. With regards to today’s
mobile technologies, it has been claimed precisely the context between “the city, city landscape, and mapping” can be revived and may lead to creative and artistic recoding of urban life (Cosgrove, 2006). Nold’s Bio-Maps illustrate a possible application of such practices to a healthcare context. They combine a Global Positioning System (GPS) with a biometric sensor that measures Galvanic Skin Response (Nold, 2009). Bio-Maps, it has been claimed, provide individuals and groups with objective as well as artistic means to reflect on subjective experiences. Indeed, what Boyd Davis frames as “subjective mapping” promises to unfold unprecedented possibilities for stimulating behavior change. Mobile devices, he notes, allow for precise positioning and interactivity. Unlike traditional maps, subjective maps can deliver what matters to users at a precise location in time. Through reflecting in action, he states, users may modify their behavior in the light of the current state of their maps (Boyd Davis, 2009).

Such practice and theory, which we have associated here to Situationism, indicates: Health games may explore further possibilities for behavior change precisely by confronting users with subjective and health related maps. They contrast the focus on transferring newly learned behavior - either through pervasive design or game rhetoric - with particular emphasis given to interaction with objects and environments. In this notion, space may play the following roles:

- **A Situationist approach emphasizes interaction with space as a motivation strategy for gameplay activities designed to promote health related behavior.** In order to do so, it seeks to integrate well-established knowledge about learning and behavior change, which we have discussed above.

- **Furthermore, it seeks to reformulate the belief in environmental change to leverage behavior change, originating in early social ad urban reformers.** In this notion health games can help to make aware of social and spatial influences on wellbeing. Reflecting on particular places and their impact on health, Situationist designers hope, may well encourage interaction with everyday environments. Locative health games, which we like present in the following, may suggest a re-use and re-shape of environments according to subjective requirements. In turn, hybrid – digital and physical - environments may help to initiate and sustain health related behavior change.

Table 1

*Approaches to Space in Mobile Persuasion*

<table>
<thead>
<tr>
<th>Mobile Persuasion</th>
<th>Behavior change through…</th>
<th>Urban design contributes to…</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pervasive</strong></td>
<td>Transfer of new newly learned behavior from simulated to real world set-ups.</td>
<td>Seamless and embedded experience.</td>
</tr>
<tr>
<td><strong>Situationist</strong></td>
<td>Interaction with space raises awareness for environmental complexes.</td>
<td>Artistic practices stimulate re-shape and re-use of environments.</td>
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Context awareness

Context awareness, however, is key to all three approaches presented above. Fogg observes that information will be increasingly tailored to context rather than individual user profiles. Yet, in order to deliver contextualized information, merely locating users may not be sufficient. Technologies could deliver a variety of contextual cues such as whether users are on their own or with others, what task they are performing, whether they are in a rush or at leisure and possibly even what kind of mood they are in (Fogg, 2003, p. 40). The knowledge about urbanism and space may well help to inform such context detection. So we can only welcome that current research on how context awareness may contribute to persuasive health messaging is partly based at departments for urban planning (Lin, Jessurun, de Vries, & Timmermanns, 2011). Their health advisory system Motivate considers users’ location, environment, weather, agenda, and individual profiles in order to find which aspects of context awareness have crucial impact on health related decision-making. More research in this direction promises to deliver a broader toolkit for designers dealing with health related locative media. Yet, in order to design persuasive game play activities, we argue, health games in particular must emphasize interactivity related to awareness. In the following section, we pay more attention to locations and how they may contribute to health games.

Typology of game locations

Walz provides a set of “questions that may be asked about space when designing and analyzing games” (2010, p. 130-131):

- Player: Where in the game is the player and where is the game for the player?
- Modality: When, and for how long does the game take place?
- Kinesis: How does the location affect kinesis and rhythms between players?
- Enjoymennt: How does the game’s locale affect the pleasure of playing? What emotions does the site inspire?
- Context and Culture: How do the context and culture of the location affect play related activities?

We have used this list of “locative dimensions” elsewhere to identify real world locations at stake in current health game design practice. For mobile exergames, we have indicated a wide spectrum of locales ranging from parks to public and private indoor spaces such as waiting halls and hotel rooms. We have observed the usage of staircases as well as street furniture such as benches, walls and rails on public spaces (Knöll & Moar, 2011). In the following we discuss patterns that seem to occur and organize them in a new typology of health game locations. We characterize each entry with the help of Walz’ locative dimensions and pay particular attention to their potential health context and how they may contribute to mobile persuasion (See table 2).

1) The Park

The Park stands for an outdoor game location with distinctive spatial boundaries and entrances. It invites play sessions taking place on special occasions. The GPS word spelling game Seek ‘n’ Spell for instance suggests meeting up with their friends in a
park for play sessions of up to 20 minutes (Retronyms, Inc., 2009). Parks can affect gameplay in a variety of ways. They are fenced off from car traffic and provide a safe environment for pedestrians with almost unrestricted possibility to move around. Its topography such as small hills, towers or stairs provides different obstacles for players to overcome. As an outdoor location, The Park provides unobstructed GPS and cellular signals and therefore allows locative games to constantly track players’ position and movements. Designers highlight emotions evoked such as feeling safe, being active and healthy (Retronyms, Inc., 2009). The cultural context of parks cannot be dealt with comprehensively in this paper. However, we like to point to their tradition for being both: Sites for public health care and more “hedonistic” connotations of play (Koolhaas, 1978, p. 70). Players may encounter friends as well as strangers in an informal atmosphere. The Park may contribute to both strategies within mobile persuasion. It provides a safe and healthy environment to rehearse health related behavior. Meanwhile, since it is frequented primarily on “special” or non day-to-day occasions, it hardly fosters direct transfer of learned behavior through seamless experience. In contrast, The Park emphasizes and encounters play and therefore contributes to collide health game rhetoric with its urban context.

2) The Conduit

The Conduit includes a wide range of locations from streets and sidewalks to corridors and staircases. Unlike The Park, it has less noticeable spatial boundaries and is mostly conceived as a space connecting two locations. The Conduit seems a more prominent part of our everyday routines, providing a game modality of short-termed but highly frequented play periods. Staircases are an interesting example for The Conduit. The stair climbing game Monumental (MeYou Health, Inc., 2010) combines physical exercise with the virtual storytelling of visiting world famous monuments such as the Eiffel Tower. It is played throughout the day, for short play sessions of up to ten minutes. Indoor staircases as well as streets with surrounding high buildings generally will have little or no GPS reception. However, their topography can directly influence play rhythm, especially when designed to produce physical activity. With regards to average staircases or corridors, The Conduit would not normally evoke strong emotions. Monumental sets out to augment less interesting real world game locations by digital storytelling. Cultural contexts vary, though we may experience traversing a Conduit often on our own. Games such as Monumental therefore seek to augment Conduits with a virtual community. The Conduit contributes foremost to provide a seamless experience: Being pervasively available in everyday environments, it helps to integrate gameplay fostering new health related behavior into daily routines.

3) Agora

Agora is the name for market places and public squares in ancient Greek cities, which had been commonly used as a place for popular and political assembly. Ching points to an Agora as a well-defined urban space, which enclosures may consist of arcades or gallery spaces. They would include surrounding buildings into their domain and activate the space they define (2007, pp. 157, 411). For our purposes, we emphasize public spaces providing service and shopping including inner city pedestrian zones, large supermarkets and indoor shopping malls. Unlike The Conduit, The Agora hosts many people and sparkles social interactions of various modalities. It is pedestrian friendly,
mostly fenced off from car traffic and enables positioning through GPS signal and/or wireless LAN. Agoras may contribute to certain locative games particularly well, for, as Sieverts notes, they artificially reproduce and “dramatize” social interactivity for mostly economic interests (1997, p. 37). Cruel 2 B Kind (McGonigal & Bogost, 2006) plays precisely on social norms in public spaces encouraging players to make compliments to total strangers. Health games dealing with players’ food decisions may target Agora’s grocery shops and (fast food) restaurants as well as the public place between them.

4) The Social Place

As The Conduit, social places such as the school, office and workplaces are a distinctive part of our everyday life. They are frequented for longer periods, several times throughout the day. We have mentioned the game project Time to Eat earlier, which deals with nutrition and is primarily played in school restaurants (Pollak, Gay, Byrne, Wagner, Retelny, & Humphreys, 2010). Their play rhythm is less influenced by topography but by social interaction. Positioning information, however, might be not available. Gay points to the potential of social influence in behavior change and emphasizes the close relationship between real and virtual support groups and the social dynamics stimulated by spatial configurations and layouts (2009, p. 51). The Social Place seems to be suitable for pervasive and rhetoric persuasion. Bogost himself has outlined a nutrition game, which makes use of location awareness by confronting players with a simulation depicting the consequences of (bad) eating habits (Bogost, 2007b). Additionally, we may point to studies that have shown the way that layouts of restaurants and supermarkets may “nudge” people to make certain food decisions (Thaler & Sunstein, 2009). Situationist health games may address school or work restaurants in order to make players aware of such health related architectural settings and may even stimulate a discourse on their alteration.

5) The Waiting Hall

The Waiting Hall can have distinctive spatial boundaries, but would often be characterized by open areas and easy access. They have been seen as transient places of an urban and mobile lifestyle. Sieverts for instance has indicated the lack of attention that is paid to the needs of people in so-called “Non-Places” (1997, p. 87). In contrast to The Conduit, The Waiting Hall emphasizes that we paradoxically often sit or stand while being on transit. Its game locations include airports, hotel rooms as well as airplanes, trains or buses. The time we spend in such locations varies a lot, yet more importantly it has been characterized as “moments of downtime”, in which people would feel “trapped in silence” (Fogg, 2003, p. 189). In this regard we may frame The Waiting Hall as evoking few emotions by itself. Likewise, its cultural context is challenging: It provides many fellow travellers and potential contributors to the gameplay, but most people would state that they experience Non-Places on their own. In terms of persuasion, The Waiting Hall highlights potentials for de-familiarizing in a health game context. Bogost has shown this for instance with his mobile game Airport Security, which expresses criticisms of policies relating to Security measures. It is played precisely while going through security checks (Bogost, 2007b). Mobile exergames explore the small space available to us in The Waiting Hall as playground for exercises (Jog Hop, LLC., 2010).
6) The Water Cooler

Our last entry refers to landmark objects, which may often stimulate opportunistic social encounters. They are part of interiors or may consist of what urban designers call “street furniture”: Outdoor benches, stairs, rails, walls, streetlights, public art, bus stops or ATMs. Interestingly, more traditional studies on how health and community design may impact physical activity refer to street furniture as “amenities” mere aesthetic value (Frank, Engelke, & Schmid, 2003, p. 165). It may be precisely through strategies of locative health games that such spots can stimulate physical activities, too. Water Cooler objects are often encountered for a short period of time and are more or less frequented throughout the day. They often generate an increased social interaction around them and provide a micro topography. These in turn can be addressed by the gameplay of exercise games as an obstacle to interact with (McGonigal, 2009). The interplay between street furniture and players may be described as sportive engagement that playfully contests players in the way free runners explore the urban landscape (Feireiss, 2007). Water Cooler objects evoke emotions by the way they are designed and by the social interaction they stimulate. They are being referred to as “natural habitat” or “challenging spots” (McGonigal, 2009). The potential to stimulate health related behavior apart from exercises through interacting with Water Cooler objects has not yet been further explored. Being ubiquitous to everyday routines, they seem to advance a pervasive approach to mobile persuasion. In addition, their landmark as well as small-scale character makes them locations easy to indicate, to map and potentially to alter.

Table 2

<table>
<thead>
<tr>
<th>Typology</th>
<th>Where</th>
<th>Modality</th>
<th>Play Rhythm</th>
<th>Emotions</th>
<th>Context</th>
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<td></td>
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<td>Free movement.</td>
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<td></td>
<td>facilities.</td>
<td>Frequently</td>
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<tr>
<td>6) Water Cooler</td>
<td>Outdoors &amp; Indoors, Street</td>
<td>Short term,</td>
<td>Good Signal, Topography,</td>
<td>Challenging, Out</td>
<td>Colleagues,</td>
</tr>
</tbody>
</table>

Locative Health Games

The term locative media has been framed to indicate interaction of media content to locales (Galloway & Ward, 2005). Walther has presented a comprehensive list of
pervasive gaming formats outlining various technical possibilities for digital games to interact with space (2007). In the following, we seek to apply Walther’s pervasive gaming formats to the field of health games and relate them to more cultural and urban implications. In addition to the typology of game locations presented above, we like to discuss a new framework of what we call “locative health games”. They interact with different types of locations in order to achieve specific health related purposes.

1) Mobile Interfaced

Walther sets apart “mobile interfaced games” from practices of “true” pervasive gaming, since they do not implement users’ position or movement to their game rules. Such games would often be merely miniaturized versions of traditional videogame formats - running on smaller screens of mobile devices (2007). An example for a mobile interfaced health game may be Bayer’s glucometer system Didget. It can be attached to Nintendo’s portable play console DS and is distributed with the adventure game Knock’Em Downs (Bayer HealthCare, Inc., 2009). Additional items and game worlds reward players’ testing habits. Though the Didget consists of portable devices, we have noted elsewhere, it does not address specific game locations or attempt to explore pervasive gaming strategies (Knöll & Moar, 2011). However, mobile interfaced health games may point to an interesting aspect of context awareness. Whereas they seem to pay less attention to social and topographic context, they allow integrating medical data into their gameplay. Due to attached biosensors, they foremost motivate through positive feedback and operant conditioning as described by Fogg (2003, p. 49). Combining self-monitoring with positioning and / or social interaction may enhance such approaches to mobile persuasion.

Mobile Embedded

In contrast, mobile embedded games integrate player’s position and position change to their game rules (Walther, 2007). We have shown elsewhere that mobile exergames seem to use this format extensively interacting with a variety of game locations and topographies (Knöll & Moar, 2011). With regards to the typology of game locations presented above, we may state that since they require GPS signal and free movement, mobile embedded exergames such as Seek ‘n’ Spell seem to take foremost place in park-like spaces. Locative attributes of what we have described as The Park above seems to largely contribute to leverage physical activity. Unlike mobile interfaced games, its designers indicate and address preferable game locations. Still, it is important to note that mobile embedded games are not location specific.

Location Specific

Walther defines a location-based game as including relative or absolute but static position to its game rules (2007). With the notion of location specific we like to include games that respond to attributes of locations rather than to their global position. CryptoZoo (Mc Gonigal, 2009) may be seen in this category. It suggests specific spots in the urban landscape to interact with. We have called the typology of locations targeted by such games Water Cooler objects. Interestingly, location specific games seem not necessarily to rely on GPS based positioning. In CryptoZoo, players locate and share spots on a map at the game’s website. All gameplay activities start off from
one specific location, e.g. balancing over a series of park benches, but may be transferred to other spots with comparable locative attributes. Such transfer points towards a fourth category: translocational health games.

**Translocational**

Smartphones and PDA’s tend to use a combination of GPS and WiFi data to determine geographic location. Due to the limitations of these technologies, activities that seek to use this data are limited (mainly) to the outdoors. A further distinction needs to be made here between different two modes of utilizing data relating to geographic location. As stated above, location specific applications can locate and integrate known geographic features. Whereas this can make for a rich ‘embedded’ experience in gameplay for example, it does limit applications to specific locations. In order to enable a location sensitive game to be played anywhere, properties such as stored visits, speed, orientation and relative movements need to be incorporated. Such ‘translocational’ media has been used to deliver a locative sensitive, but not location specific, drama for example by (Parry, Bendon, Davis, & Moar, 2010). *Monumental* seems to be an example for a health game in this category. It targets a distinctive typology of game locations, which we have described above as The Conduit. In Monumental, it does not matter in which specific staircase users play. Translocational health games emphasize the idea of re-visiting various locations within one typology such as restaurants. Since play results can be stored, players can compare performances and may see the results of different behaviors. Such a feature may become of particular importance for locative health games dealing with disease management, as we like to outline below.

**Concept for a mapping game**

“The Creature” is an ongoing research & design project aimed at providing a locative game experience that motivates children with type-1-diabetes to document their daily disease management. Recording sugar levels, insulin dosages, food intake and exercise regime are crucial to diabetes education, since it is on this basis that doctors can discuss potential therapy improvements. For diabetics, sugar levels are the result of multiple factors, yet their control is often credited as good or bad individual disease management. A mapping game may help to reveal probably unexpected correlations between sugar levels and the built and social environment. In the following, we will specify design implications of what we have framed earlier as Situationist approach:

- On the one hand, we aim to find out how game locations can help to motivate daily diabetes logging. The gameplay may start off from established “building blocks” for health games (Lieberman, 2010), of which the nurturing of a virtual pet seems to be widely used in diabetes games (Knöll & Moar, 2011). Our design interest lies in exploring how such virtual characters may respond to different game locations in order to sparkle interaction with the player. Conceptually, such a mapping game may start off as translocational, addressing various places and allowing the player to compare his “performances”. For instance, whereas one day, sugar levels at the school restaurant were good, another day they were too high in the fast food restaurant. Potentially, the mapping game might turn location specific, allowing the player to compare different “performances” at places he or she re-visits. Location specific
gameplay may encourage diabetics to improve or maintain good sugar levels at one specific location such as the school restaurant.

- On the other hand, to map diabetes management – that is to relate relevant data to their locations – may raise awareness of its environmental influences. Such social, spatial and environmental circumstances may add an interesting layer to diabetes education. On a basis of such maps, doctors and patients may discuss broader influences on patients’ wellbeing and potential therapy improvements.

Further research & design must interrogate the claims being made for such Situationist approach to health games. Thus might show in how far the new typologies of locations and formats we have presented in this paper help to design and analyze locative health games. For the purpose of our mapping game, the presented framework directs us to what we have called Water Cooler objects as a significant type for further research. These spots are visited frequently in users’ daily life. They seem to be of temporary character and seem more likely to be altered by individuals and (game) communities. Moreover, they can be chosen according to which sort of social interaction players prefer. Developing game play activities around such objects, we hope, may increase frequency of input and may enhance player’s identification with and care for a virtual character. In upcoming interviews, we plan to ask users to map their diabetes management in the form of hand drawn maps. Such sessions will help us to advance the discussion on specific Water Cooler objects to be addressed by the gameplay.

Conclusion

We have contrasted two approaches towards space in mobile persuasion here and related them to current health game design practice. Whereas advancing the transfer of newly learned behavior emphasizes context awareness - either integrating or colliding game rhetoric to its health related context, we have highlighted interacting with space as a further possibility to stimulate health related behavior change. What we have called a Situationist approach to health games builds upon various strategies of user motivation discussed in persuasive theory. Yet, it invites consideration that behavior change can be stimulated and sustained through becoming aware of and altering built and social environment, too. However, mobile platforms may unfold a whole spectrum of what we have described as locative health games, integrating real world locations to their gameplay. We have conceptualized a new typology of such real world locations and went on showing how different kinds of locative health games make use of them. Further research & design must specify the discussion on locative health games, which potentials and challenges we have aimed to outline here.

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Bayer HealthCare, Inc. (2009). Didget. blood glucose meter system.


