

DigiFys: The interactive play landscape

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ABSTRACT

The DigiFys project explores the design of interactive landscapes for children's outdoor play. The project combines landscape architecture with design of interactive technology, working towards designs that support children in their everyday play activity, close to home. In the creative lab session, we want to co-design the play landscape together with local children. The focus is on acquiring a perspective on similarities and differences between the children's play culture in Sweden where the project originates, and Malaysia.

Author Keywords

Playscape, Landscape architecture, Interactive play technology, Play

ACM Classification Keywords

J.5 Arts and Humanities: Architecture;

INTRODUCTION

Outdoor play is typically considered an essential, healthy, and desirable activity for children [3], not in the least in order to encourage physical activity. Yet, studies have shown that children today spend less time outdoors than previous generations [4]. While the impact of this on children's physical activity has received much attention [14], equally severe may be its impact on pretense play [4], the form of play that Piaget considered most beneficial for the child's cognitive and social development [13].

One way to overcome this is to recreate the physical outdoor environment to be more children friendly and playable in a way that appeals to a new generation of digitally savvy children. DigiFys is a collaboration project between interaction designers and landscape architects that

strives to make interactive technology completely integrated with a specific place.

DigiFys is a Europe-centric project. The purpose of this children creativity lab is to let the designers in DigiFys meet children from a culture that offers different opportunities and challenges for outdoor play than what they have worked with so far, thus widening the scope of the design approach.

BACKGROUND

Children's Outdoor Play

Children's outdoor play is typically revered as "a natural and critical part of a child's healthy development" [4] through which children get physically apt, get to use their creativity, and learn important skills such as social competence and risk assessment. The outdoor landscape plays a key role in shaping children's play. Talbot and Frost [19] coined the term 'Playscape' as a way to think about how a particular landscape affords play and magical thinking. Herrington and Studtmann [9] used landscape interventions to redesign play at a schoolyard, showing that this did not only lead to more varied play activities and an increased focus on pretense play, but offered opportunities for increasing the social status of children with high verbal and imaginative skills.

Designing interactive technology for outdoor play

The interaction design products for outdoor play tend to focus on physical play. An example of this is the range of interactive products offered by Lappset¹, such as an interactive wall that reacts when a ball is kicked against it. Sturm et al [17] suggest that such installations should afford simultaneous interaction by multiple players, be simple to use, and while not necessarily be games, still offer an interesting challenge to explore.

Play research has to a larger extent placed focus on supporting open-ended and creative play. De Valk et al. [5]

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¹ <http://www.lappset.com/global/en/Products/Interactive-Play>



Figure 1. An augmented place: a central spot close to the shopping center, augmented to become attractive to small children together with their parents.

propose a design strategy towards what they call open-ended play: play activities that are guided but not constrained by the designed artefacts. Very similar design principles have been articulated for playful art installations in public spaces [11].

These design approaches have in common that they focus on the interactive technology as such. With the exception of Seitingers' work on moving explorers [16], the crucial role of the playscape, or of nature and natural materials, is seldom taken into account.

PLAYING CLOSE TO HOME

The most commonly alleged reason for the decline in outdoor play is the increased access to screen-based activity in the form of TV, Internet, and computer games. But in addition, the urban landscape is increasingly designed as if children would only play in designated playgrounds, designed to offer safety and seclusion. While access to parks and recreational areas has been shown to correlate with physical activity [14], many residential areas today include little support for children's play and the general urban outdoor environment cannot be considered children friendly. There is also a tendency towards offering fewer but better equipped playgrounds [2], combined with commercial indoor play environments. While these play environments are engaging and well visited, they are few and increasingly farther apart, relying on parents to arrange a visit that often requires travelling by car. Outdoor play has become a field trip, and everyday play is dominated by sedentary indoor activities in the home - often in front of a screen.

Capitalizing on both interaction design and landscape design, the DigiFys project thus proposes a design process that focuses on children's immediate surroundings - playing 'close to home'. Instead of looking into the dedicated play area, DigiFys looks at two places: the immediate surroundings of multi-apartment residential houses and the route back and forth to school. These are places that children frequently visit, that are (or should be) safe for



Figure 2. Concept design: nature and technology brought close to home. ©Urbio

play, but that also have to accommodate for a host of 'adult' activities. Through landscape design, it is often possible to repurpose such areas for multiple uses: purposeful, recreational, social and playful. Through the introduction of interactive play technology, the places are further enhanced to offer rich and varying play activities.

METHODS, PROTOTYPES AND CONCEPTS

The project works in close collaboration with children and teenagers in Vårby Gård, a suburb to Stockholm built in the seventies, soon to be renovated. The project has visited the area on numerous occasions. For example, a walking tour was performed to understand how the children would play on their way back and forth to school. In a workshop with teenagers, the participants were encouraged to select places of importance and create installations from simple materials provided by the project team (see Figure 1) that could enhance them.

The findings from such workshops have been used as inspiration for a double design process. Landscape designers have worked with sketches to redesign yards and paths. Interaction designers have designed interactive installations that have a direct relationship with the place and the nature in which it is installed.

Since a full redesign is costly and permanent, the project works with sketches as a main tool in illustrating landscape concepts. Practical trials are done with temporary installations and cheap materials; an advantage of such solutions is that we can continue to work with children in workshops to feedback and get suggestions for modifications. By contrast, interaction designs are done in the form of partially and fully functional prototypes, gradually working towards commercially viable solutions in collaboration with a commercial company.

An example of a landscape redesign concept is shown in Figure 2. This particular concept focuses on seemingly bringing 'wild' nature into close vicinity of the house. For example, the open water is not intended to be an artificial pond but a natural one, fueled by access to rainwater of



Figure 3. The interactive tunnel.

which there is an abundance in the Nordic climate. It will sometimes be dry and sometimes wet - and sometimes mud, which is greatly appreciated by children! Note also that in order to increase the variability of play activity, the design includes an interactive installation - the interactive tunnel discussed below.

The interactive prototypes developed in the project share a common design approach: they are designed to invite open-ended play [5] as well as to allow integration with landscape architecture. They are also designed to be combinable. The project is exploring several design concepts that are at the time of writing at varying stages of development.

An example of an interactive prototype is shown in Figure 3. The picture depicts a wooden tunnel, wide enough to allow just about anything to run through it: sand, mud, water, stones, and sticks can all go into the tunnel. On the backside of the tunnel, a row of led lights reacts in different and slightly unpredictable ways to qualities of these materials such as the speed of flow, weight, and temperature. A second current prototype focuses on communication, and is implemented as a combination of a loudspeaker and a microphone. These communication nodes can be placed in different locations and used to send and receive vocal messages. Their implementation allows for a wide range of physical designs and they have been realized in multiple shapes and forms, depending on their installation sites.

THE PROPOSED CREATIVITY LAB

Concerning playground design, Tovey emphasizes the important role that children play in the design process for outdoor play:

"Design of space must take account of children's ideas and perspectives. Listening to children is much more than just a consultation exercise. It involves a view of children as experts in their own lives that is deeply respectful of children as thinkers and learners with ideas that are worth listening to. It acknowledges that children create meaning out of space and that these meanings may be very different from our own." [20]

The issues identified in DigiFys apply for children in many countries, and the DigiFys approach is well grounded in international research. Still, we are aware that the design concepts developed, both in terms of landscape and interaction design, are firmly rooted in the team's understanding of Nordic nature and the play conditions of Nordic children. Hence, the ACE children creativity lab will present an opportunity to bring the expertise of Malaysian children into the project, concerning their local environment, play traditions, wishes and desires.

Proposed activities

First and foremost, we seek to meet with children in their everyday environment. The first activity will be a walking tour, looking into their favorite play spaces as well as places worthy of enhancement. The second activity will focus on enhancing a selected place using a combination of landscape redesign and interactive technology. The group will bring play prototypes for installation, but the children will also be encouraged to experiment with non-functional and partially functional materials to create imaginative interactive artifacts suited directly for the place. Finally, the children will be invited to be co-researchers; documenting their installations and ideally redesigning and trialing them while observing the reactions of passers-by.

The activity is expected to take approximately four hours in total, with the first walking tour taking up the first hour and the majority of the time spent on creative design and observation. Towards the end of the session, the participating children will be invited to evaluate the session.

The activity will be lead by a mixed team of researchers active in the project including both interaction designers and landscape architects. The aim of the activity is to acquire a broad understanding of the design conditions and how they are similar, and different, from the conditions observed locally in Sweden. The activity will be documented through video and observer notes.

The expected outcome of the workshop is a cross-cultural comparison of the conditions of play in Sweden and Malaysia, including both physical and social aspects, including conceptual ideas for interactive playspace architecture in two very different suburban landscape types.

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