EDUTAINMENT IN INTERACTIVE ENVIRONMENT FRAMEWORK

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Abstract: education and pedagogy have acquired qualitatively new characteristics due to development of new technologies and introduction of "smart objects" into interactive environment on design stage. Studies show that learning is easier and more interesting when introduced as a game by means of interactive systems. A continuous dialogue between users and environment allows to fully immerse into activity and focus on absorbing new knowledge better and interactive environment allows users to adapt space and satisfy emerging various needs.

Keywords: interactive environment, smart objects, education, entertainment, edutainment, communication, design, architecture.

ОБУЧЕНИЕ С ЭЛЕМЕНТАМИ ИГРЫ В ИНТЕРАКТИВНОЙ СРЕДЕ

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Аннотация: образование и педагогика приобрели ряд качественно новых характеристик благодаря развитию новых технологий и внедрению «умных объектов» в интерактивную среду на стадии проектирования. Исследования показывают, что обучение проходит легче и интереснее, когда в процессе присутствует элемент игры, достигаемый за счет использования интерактивных систем. Непрерывный диалог пользователей и среды позволяет полностью погрузиться в деятельность и сфокусироваться, усвоить новый материал лучше, а интерактивная среда позволяет адаптировать пространство для разных видов деятельности и удовлетворять разные потребности потребителей.

Ключевые слова: интерактивная среда, умные объекты, обучение, развлечение, взаимодействие, проектирование, дизайн, архитектура.

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The new technologies in virtual reality and responsive environment present huge didactic potential because it combines entertainment and learning. With attention and interest to the process, students (no matter what their age is) are able to improve their knowledge, to study better, and to enjoy the whole process. The implementation of kinetic elements and the mobility into the studying space gives children the opportunity to operate their environment, to shape it the way they like it and motivate to stay more and study, opening mind and giving freedom to creativity.

It is arguable that interactive space can stimulate studying process of the children. Nowadays, formal education consists of student centered continuous learning experience, teaching and steering by professional teachers. The end of industrial society with the upcoming of post industrialism, and the new context of knowledge societies, evidence that we are approaching a point in history where actual educational approaches to schooling and its classroom physical facilities, have become obsolete.

Educational reforms are limited by the still prevailing industrial school system itself as teaching and learning spaces from another historical period. Long periods of time sitting and listening, where each student is isolated at a desk creates little opportunity for developing the social and communicating skills required for relating to others and for solving problems in the real world.

Implementation of interactivity into built environment on every day basis was described by different authors much earlier than the tools to carry it out actually appeared. A significant example of emergence of this idea in literature can be found in stories by Ray Bradbury. His short story "The Veldt" published in 1950 illustrates prediction about people in distant future (almost the point people achieved by this moment). It is about a family that lives in an automated house called "The HappyLife Home," filled with machines that do everything for them from cooking meals, to clothing them, to rocking them to sleep. The two children, Peter and Wendy become fascinated with the "nursery", a virtual reality room that is able to connect with the children telepathically to reproduce any place they imagine. This interactive room was created to understand the psychological conditions of children easily, and for their entertainment, of course. There other attempts to describe the world of future by different authors, the most exiting is the fact, that what they could only imagine 60 years ago now becomes real,

evolving into absolutely unbelievable techniques and applications, that even the science fiction writers could not predict [1].

Interactive design of the public environment engaged social and cultural dimensions of space. A lot of projects have utilized the medium to engage in political arena through participation. Designers often seek for chances to use spatially defining interaction as a mechanism to understand, shape and promote social interaction. The physical space can be used to include or exclude people from one another, to facilitate, dissipate, or focus crowds. In this way, in the realm of physical architecture, interactive public spaces can have a profound effect on social interactions. It is important to point out that a lot of projects in public sphere play big role in testing the durability of materials as well as the tie frame of particular interactive strategies within the context of unpredictable participants [2].

With the development of new technical capabilities, "smart objects" start being able to receive a lot of information from the external environment. The people's behavior is a significant part of this environment. This leads to necessity of understanding the feedback with the world and the notion of "family of smart objects" in our environment that can communicate with us and with each other by sending messages using the built-in microprocessors which are giving different information. A lot of these components are designed to capture information from the environment, such as temperature, light levels, wind speed and noise. Some components are able to receive simple messages from users. They feel our presence radiated heat or movement and react in some way [3, 4].

Dr. Montessori designed a "prepared environment" in which children could freely choose from a number of developmentally appropriate activities. "Montessori reflected upon the natural behavior of human beings in relation to their environment. She used different definitions of behavioral tendencies on separate occasions, reflecting her primary role as an educational practitioners rather than a psychological theorist. Some of those terms are: exploration, orientation, order, imagination, manipulation, repetition, precision, control

The new archetype is based on a modular skin consisting of hexagons that will change of phases depending on what type of atmosphere needs to be created and what type of learner wants to be stimulated. The normative building and skin are constantly communicating and responding to each other to provide the best space quality.

For example, when the skin is facing the Ponce de Leon Avenue and is dressing the façade of the Gallery Space and Auditorium, it becomes a white operable shading device that controls how much natural light is wanted in the space. In this particular location, the skin behaves as a formal archetype that responds in a subtle way to the site context. On the other hand, when the skin is located in the playground area, but dressing both classrooms façade, it becomes a colorful manually operable skin that behaves as a shading device but also as an interactive toy that children can play with.

The stimulation of kinesthetic learner starts when a pedaling system is added to the bottom of the skin. Every time a child goes to recess, they can lay back on a deck and start pedaling, making the skin (hexagons) open and close. Changing the scale and proportions of the components of the skin will change how children perceive its characteristics and spatial qualities. By incrementing its size, the hexagon becomes a shelter where the kinesthetic and auditory learner are being stimulated. When the child gets inside the hexagon, the auditory learner is stimulated by providing a comfortable space where too much noise can't get it. When the children start climbing the hexagon the kinesthetic learner is being stimulated by enhancing their motor skills.

The modular skin will also be fixed to walls or roofs when there is no need for it to be operable. Sometimes the skin behaves only as a canopy or sculptural element to announce and celebrate the building or to provide comfort zones with shading.

The project proposes a building that combines a research and educational centre as part of a larger campus setting to the south of Reykjavik, towards the coast. The building utilizes transformative structural typologies, such as the transition from load bearing to non-load bearing wall, as a strategic way to implement shifts in programmatic and spatial relations. The result is a space for theatrical exchange and interaction between visitors and tourists and researchers.

In effect the building stages a distribution of exchange points between research in clean energy technology and tourism. It engenders a layering and coupling of building programs and makes a trope out of the serious and the funny, the thought provoking and the amusing.

The building is positioned towards the northern edge of the proposed campus in order to make use of the various flows of people and traffic and make a constructive social complex out of these. Visitors drift or are guided through the building and receive an insight into the planning and development processes for the future use of energy. Scientific research becomes transparent and is made public in spaces that undulate and furl around one another [5].

The structural configurations provide a range of different spatial situations, from areas of one-sided visibility to areas where both user groups can interact physically. The design strategy deploys the twisting or turning of 'walls' from horizontal to vertical elements as a means to regulate visibility and physical permeability between different spatial zones.

The strategy dissolves a clear distinction between structure and envelope and posits a 'solid' volume on top of a transparent base volume. The volumes become interlaced to accommodate the two main programs, education and entertainment, as these spiral through and between the shifting conditions of the walls.

References / Список литературы

1. *Bradbury Ray*. The Veldt // The Illustrated Man, 1951.
2. *Fox Michael and Kemp Miles*. Interactive Architecture // Princeton Architectural Press, 2009. 97-105.
3. *Kereshun Alyena*. Abilities of Interactive Architecture // Architecton: university news, 2006. № 14. Jul .
4. *Boychenko Kristina*. Sences and Behavior of Interactive Environment // Vestnik Nauki i Obrazovania, 2017. № 2 (26).
5. Architecture Supereva, Interviews. [Electronic resource]. URL: http://architettura.supereva.com/interview/20040205/index_en.htm/ (date of access: 01.04.2009).