



Art and computer usage: Representational environments of digital games and handling them as non-verbal communication actions

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ABSTRACT

The question that arises is what the role of computer environments and specifically digital games which are used in the learning process is and how art is involved. The goal was and remains the concord of nature with our cognitive ability, while the notorious cyber-culture (posthuman) in recent decades leaned towards the view of an osmosis of humans and machines. Insurmountable obstacles for that osmosis are the processes of subjectification, as technologies de-subjectify. However, digital machines possess informational transparency, encode information and constitute an additional tool. On the other hand, art opens ways to the immaterial, today, of course, different from the experiments of art-ists during the 1960's. Art achieves the rupture with the limits that the real world sets and lends enormous possibilities for the depiction of structures, either adapted and with a specific cultural content representations or provoking the collaboration between imagination and intellect.

KEYWORDS : Art, interface, visualisation, computer game, human-computer interaction

Introduction

The first stage is how from a layer of non-representational abilities to allow the formation of mental representations, that is, in this instance, how the rules of digital games act as learning objects. In the case of digital games there is an examination of concepts, as students experiment with their rules. Even if they do not show initially an interest for the computer environment, during the execution of the activities they will be involved, and at the next stage they will be called to develop their imagination and creativity, by designing new rules in a computer environment. Therefore, the objectives of learning with the use of digital games are the development of imagination and creativity, the students' involvement in symbolic expression, the search for the essential.

This could lead to a parallelism with the possibilities of digital art where the image on the Desktop is saved as a file and is available to every user, who can change its form. Every project which has its base on the computer, that is where the move from the tangible to the digital has been achieved, creates a huge opening to new possibilities, since the code has no limits. The only limits are the imagination and the mental abilities of the person who writes it. A necessary condition in both activities is the understanding of a language. Students are not usually familiar with the programming languages and on the other hand it is well-known what an ambitious and difficult task it is to communicate with the artwork, to approach the visual language. The important thing is to provide time for a substantial knowledge, to achieve the search for the essential.

In the field of Fine Arts, which are aesthetic and oriented towards assessment rather than consumption and use are interested in the visible instead of the real, a study was conducted of criteria of structure, form and content, regardless of mental psychological tendencies and moods. The emphasis was rather on the internal relationships of the structural components. Regarding order, what is traced are the manner of the organisation of data, the placement, the balance or not or the composition, the axis and the culmination point, the fidelity or distortion and other similar elements. Regarding colour, what is detected is the effect of each chromatic scheme but also of the chromatic compositions and contrasts, the intensity, the opacity, the brightness and their tonal gradations. Regarding space, what was studied were movement, depth, perspective, the projection or diminution of elements, the horizons, the sizes, the integration proportions of the human body type, the observer's view and other similar elements. Regarding origins, what was studied was intersubjectivity, the timeless and intercultural dynamism of the artwork.

Analysis

Positing that the computer environment used forms an integral part of the learning environment, one of the aims of the research was to study how the institutional/cultural content contributed to the construction of meaning by the students. The organisation of the class

as to the "guiding process of creating meaning through the students' tools and through that the enrichment of learning" guarantees the ability that the student activates mechanisms of function both at the level of creation as well as at the level of evaluation. According to the socio-cultural approach, the process of creating tools can be considered as part of the process of developing participation in a community in which the understanding of meanings and behaviours emerge at individual and overall level.

The social-emotional norms do not emerge solely from the verbal interactions, but also from manipulation as non-verbal communication activity. The norms emerge through the actions of students in the learning subjects, as well as the discussion or the sharing of their views and ideas. The sharing of concepts and ideas functions as a background through which students explain and justify their thoughts. Regarding the construction of the concepts and the perceptions at the individual level, students are influenced by the context in which it is located and the interaction with it, such as for instance the social environment, the tools it uses computationally or not.

Each student uses the tools according to the specific usage patterns with the aim to achieve the objective of the task. To do that, the tool can function as a semiological medium, that is for the meanings to emerge from the person's engagement with the activity.

The nature of activities used means that the approach regarding learning promotes it through the investigation and the design of activities that provide a framework for the investigation of manner which allow students to appreciate the usefulness of the new knowledge of the manners of perceptions and ideas taught. The thing highlighted is the design imprinting, in the same way as in art, according to Zeki, vision is the search of the essential, since language lacks the ability to export so adequately the formalistic essential as creative cause of the specific precept.

The installed abstraction in artworks as a physical and mental framework for the development of knowledge at the level of the individual and the whole became a tool for the construction of meaning from the participants. This means a conversation with the constitutional and not the meaning attempts of the creator.

Methodology

Learning is effective when the student experiments constructing a product which is meaningful for them (S. Papert, constructionism). The qualitative approach is selected, since the aim is to study and understand the learning phenomena within the framework that takes place. There is a special focus on the interaction of students with artworks as well as with game environments. The important thing is that their thinking is affected. No specific learning event is aimed at, but what matters is the manner of approach, what is important is the process. According to Cobb et al (2003) the research pertaining to learn-

ing must be directly related to the interactive system of factors affecting learning, the social norms, the tools used, the actions of teachers and similar factors. In order to emphasise the complexity of the educational practice, the authors call it the ecology of learning (p. 10).

Construction Tools for Digital Games

A website which tries to create questions for subject study groups which are mixed with various playful patterns is Zondle Team Play (https://www.zondle.com/publicPages/zondleTeamPlay_guideStart.aspx). A visitor can find thousands of topics already created, and one can insert their questions in combination with a game of their choice. Next, four construction tools are quite indicatively presented. 1) Agent Cubes offers the ability to design worlds using cubes, programme them and after having designed games, to publish them in HTML5 form. Moreover, its reference to education focuses on the support of educators from a group of professionals and mentors and not solely on the online tool support. Website: <http://www.agentsheets.com/agentcubes/index.html>. 2) Alice, which is a tool for the construction of interactive stories. This takes place in two spaces, a space for the creation of scenes and a space for programming. It can however form the basis as well for the construction of a playful creation. There is a rich bibliography and support material for educational purposes, which focuses mainly on the ability to acquire programming skills supporting the computer language Java. Website: <http://www.alice.org/index.php>. 3) Kodu is a tool of depictional or visual programming, which offers children the ability to create games for PC and Xbox in a simple manner. Kodu can be used to teach creativity, problem-solving, digital narration, as well as programming. It can be used for the creation of digital games both from young children as well as from adults with no programming skills. There is support for training purposes. On the website two dimensions of use appear, one regarding the link to the curriculum (USA) in a module associated with the planet Mars as well as a section on water. There is also a version that works on touch mode and aims at the learning of programming principles. Website: <http://www.kodugamelab.com/>. 4) Cruislet (<https://remath.cti.gr/en/technologies/dynamic-digital-artefacts/cruislet.html>) and the tabs it contains (avatar tab, content tab, log tab), the surfing in space through the movement of the airplane, where the user selects a specific city and is directed to it, the determination of geographical coordinates, the use of a 3D controller, the properties of the camera for change of the eyepoint, creates a 3D environment for the study of space based on the subject matters of Mathematics, Geography and Computer Science.

Criteria of Evaluation-The Intersubjectivity of Art

First, the fact is emphasised that the design activity is certainly a subjective process, which depends on the object and the designer, but it does not mean that the designer works autistically, because the objective dimensions exist, as the design object will be used and evaluated by others. Therefore, the design process is a process that can be partly seen as an objective process. Criteria for evaluation such as performance, optimisation, reliability, flexibility, adaptability, the possibilities, are essentially criteria for the control and acceptance of the success of the design.

Regarding the intersubjectivity of art it is not a normative feature, but the result of the inevitable convergence of the various readings of a work, by place time, mood, provided of course that the form and structure of the work trigger specific brain centres, which are associated with the deep layer of the biological capabilities and which largely remain unaffected by the particular place, time and mood, while by necessity cause the emergence of consciousness.

Conclusions

The study of artworks helped in the ability to manipulate representational systems such as 3D computer environments (games to teach and games to learn). Issues were explored, such as illusionary problems, entering the condition of up and down, shapes lined in a linear or imaginary diagonal, pairs of opposites, different sizes, peak points, Renaissance perspective indicators, space and vacuum, the role of the void and other relevant topics. Also there was an analysis of colours, shapes, lines, directions, that is anything that constructs a visual syntax, directly digestible, which converts aesthetic properties into perceptive qualities and through the creation of a mental image trigger primary responses. A similar course was followed in the creation of their own computing environments aiming at the integration of artistic methods in computational activities, representation and implementation.

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