CoCOasis
The Collaborative Creativity Oasis

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Abstract— CoCOasis (CCO) aims to improve education (learning) and foster creativity in design disciplines, through the use of ICT provided by human-computer based expert systems, while reducing the ‘skills gap’ when students transfer from the current education system into the 21st Century Skills industry. Creative processes are often hindered by context, set boundaries, constraints, and ‘blindspots’, a term used to describe unexpected, unseen, unknown, unforeseen and/or ignored areas of knowledge and gaps in an individual’s understanding and experience of the world around them. The concept of this vision is to support human creative processes by augmenting them with technology, enhancing creativity and tackles e.g. the blindspots head-on. We envision the CCO as an open and flexible area, indoors or outdoors, that can fit or emerge anywhere/anytime/anyhow. It can be a room, a space, a yard, a public space or simply a floor. An oasis can be made from a range of available artifacts (e.g. chairs, tables, walls, dividers, screens, whiteboards, cardboard boxes etc.) or could stay bare, each eventually being populated with actors/users and/or stakeholders. Such a “place” is easily transformed into a CCO the moment interaction and activity (i.e. face-to-face, dialogue, playing, gaming etc.) is started and the participants immerse in interactive creative design process.

Keywords-design; creativity; collaborative; processing; HCI

I. INTRODUCTION

It has been acknowledged that educators are approaching the teaching process in a very traditional manner within design and engineering education. This is despite the information/technology advances of recent times and changes in society’s habits and lifestyles. Additionally there is general acknowledgement of a gap between university educational theory and application within a professional or industrial setting. It is not feasible to continue to add technical content to an already overcrowded syllabus, though it is essential to make the curriculum open, engaging, exciting and demanding, while intrinsically linking learning to application within the workplace, in order to prepare designers for the future. There is broad agreement in the literature regarding the need to nurture creativity and improve creative potential, with many based on an “active learning” approach that encourages team-based activities, open design, co-creation, exposure to and encouragement of risk taking and divergent as well as convergent thinking. Collaborative multimodal technologies, such as virtual-(VR), augmented- (AR) and mixed reality (MR), can assist the creativity process by supporting problem identification, insight and understanding and exploratory research. In addition it can inspire innovation and foster creative multidisciplinary interactions, thus helping students learn creativity and imagination not only in educational settings but also within the public realm.

II. THE COCOASIS

A. What is it?

The CCO, as illustrated in Fig.1, is to facilitate the instant, direct or sudden sparks of creativity by allowing users (professionals or layman) to start interaction without preset conditions or fixed constraints. Creativity is the essence of what is non-mechanical [1]. However, every creative utterance is mechanical. Creative design activity appears to be intuitive because it appears suddenly, and therefore creative design is an exploration, rather than a search. Important in this context is that part of human creativity is to arrive at quiescence, feeling comfortable and being relaxed within a pleasant and inviting space in- or outdoors. For example, the best ideas come always when you don’t expect them, meaning that they will occur as a flash of insight in the last stages of sleep-dream or at the most unexpected moments, such as when taking a shower [2]. To account for this the CCO will be a hybrid design and engineering environment able to be setup anywhere/anytime by the user(s) in a flexible and open manner. There will be no predetermined boundaries to start or to initiate a creativity session and no artificial limit on the range and variety of tools and services that may be deployed within the CCO to enhance the creative process. Of course in reality there will be various natural restrictions according to a user’s situation or context, some depend on the availability of software and hardware plus bandwidth constraints, which in turn promotes the need for a flexible and adaptive environment.

Figure 1. Typical scenario: User activates a space to initiate a process.
When we consider such environments the additional layers of complexity come into play and become part of the distinct framework for activities, functions, behavior, structure, tool-use and interaction to assist the creative design processing (Fig. 2). The CCO will support ideation, concept development and prototyping using an iterative approach on either an individual or collaborative basis, whilst supporting the multi-location of users. The design canvas will take shape through tracking content creation, system interaction, data acquisition and data use by means of capture and recording devices (i.e. system cues, sensors, tracking, video, IO-interfaces). These design assets and contents are transformed and manipulated to be manifested as tangible or intangible concepts (e.g. photos, audio, video, cad drawings, prints, three-dimensional printing scripts, physical and virtual models). The CCO will deploy wireless devices (e.g. Wi-Fi, Bluetooth); web accessibility (Web 2.0); cloud computing infrastructures as an additional ‘Knowledge Tree’; data sharing protocols; interactive hardware (i.e. smart phones, pads, pods, tablets, multi-touch tables) and software as a service (SaaS) in the form of an virtual wall application. Simultaneously providing a mix of tangible materials and hybrid interaction tools, like the e.g. Loosely Fitted Design Synthesizer (LFDS) [5] or Pas a Pas (Bertran, 2010), to enhance and assist the creativity process (Fig. 3- right). The system architecture can vary from simple user interaction levels to complex user levels with e.g. tutor facilitation. This could be collocated or through enabled telepresence or virtual presence.

B. The hybrid multimodality approach to processing.

The mix between analogue and digital (hybridization) realms is one of the key issues in creativity sessions. Connectivity and bandwidth are another key issue to have maximum benefit from the system, for many virtual interactions will be delivered on a just-in-time basis in reaction to user gestures, manipulations and activities. However, it is not strictly necessary to have continuous connectivity for the full duration of a particular session in order to work within the CCO, as not all components will require it. Analogue created content can be easily digitized by a camera or scanner and made available and shared with others through the web or by other capabilities, where necessary.

C. Why deliver the CCO in this way?

The premise for the CCO environment is to get away from and break down the formal structures delivered through traditional classrooms, lecture halls and top-down knowledge spreading - in favor of providing a more conducive environment for creativity to thrive. Creativity and innovation requires a predominance of lifting go of inhibitions and preconceived notions in order to make room for the new, to let go of the old, while observing the world at large with ‘child’s eyes’ to wonder, imagine, explore and be amazed by all the other possibilities. Idea killers and naysayers support and control mainstream thinking, which in turn often creates mediocrity and uniformity thereby simultaneously stagnating creative thinking processes.

III. Stimulating and Enhancing Creativity

Open access to knowledge and learning for all, anywhere and anyplace, regardless of how the educational systems per country/society are constituted or made available, provides a strong basis from which to inspire creativity [3]. Additionally, ‘new learning’ has no boundaries and is not and should not be restricted to class, affluence, perceived ability or other potentially artificial parameters [4] (Fig. 3- left).

IV. Preliminary Conclusion

This conceptual approach to inspire creative thinking is feasible through the use of current and future state-of-the-art technology combined and mixed with best-practice advanced learning systems, traditional tools to encompass and synthesize the best-of-both-worlds. To merge the analogue and digital realms will enhance both skills and learning, foster insight in understanding and knowledge acquisition. Unquestionably, technology can provide great benefits to learners, supporting their development of 21st century skills and knowledge [4]. The challenge is to accomplish this through a reflective and holistic framework.

REFERENCES