

# Workshop—Participatory Cultures Beyond Limits? Criteria for Creative Potential of SocialVR in Art Educational Contexts

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**Abstract—SocialVR offers a variety of learning opportunities as embodiment in spheres for creation and exploration. Hybrid creativity in participatory media culture meets agency beyond physical limitations. Yet, with strong affective and multi-sensorial stimulation, it is vital to match learners' heterogeneous abilities and preconditions. This workshop is addressing art educators as well as XR-platform designers for joint interdisciplinary perspectives. How do platforms engage or inhibit creative potential? How accessible and safe are SocialVR environments for creative purposes? We suggest a classification of SocialVR scenarios in art education and respective quality criteria. The criteria stretch from accessibility, room for creativity and aesthetic flexibility to ethical implications.**

**Index Terms—art education, collaborative creating, SocialVR**

## I. INTRODUCTION

SocialVR formats provide vast possibilities for exploration and creation, stretching from traditional and contemporary artistic practices. Individuals are designing avatars as new identity at the pivot of virtual social worlds and engaging in a new in a growing SocialVR user community. With a current high demand of distance working and learning possibilities, platforms for remote creative cooperation and presentation are in high demand. The community of VR designers is growing with options for joint creating and mutual cross-fertilisation. While platforms abound, quality criteria for creative SocialVR platforms and software to foster safe and productive learning experiences are missing. Also, efforts for individualisation and meeting heterogeneous preconditions and preferences in creative SocialVR are still pioneering.

## II. DEFINITIONS

Social VR has been defined as “a growing set of multi user applications that enable people to interact with one another in virtual space through VR head-mounted displays” [1] The term *Virtual collaborative worlds* has been used from the early 2000s to describe virtual reality in order to support interaction between two or more users [2]. In SocialVR, users experience a strong impression of presence, i.e. a psychological state that can be subdivided in a personal (identifying within space), as well as a social (social perception of space) and environmental presence (sensing virtual scenes) [3].

Theory on participatory culture and respective 21<sup>st</sup> century key competences [4] is vital to transfer regarding SocialVR. While some competences may be acquired autonomously, it is the participation gap, transparency problem and after all ethical challenges which needs a comprising and considered community effort. This may be especially for VR e.g. where mobbing may be perceived more intensely than in desktop multi-player games [5]. Self-paced learning (SPL) is increasingly common and understood as algorithm for model learning to match individual learning processes [6]. This is so far not applied for creative learning contexts in SocialVR. The results of this workshop, especially the criteria as specified during the workshop may serve as a support for such endeavours.

## III. RELATED WORK

### A. Specifics of VR as creative learning environment

VR enables the expression and experiencing of a new spatial language, which may result in different notions of self and relation to others [7]. In a qualitative art educational exploratory study, VR-based painting is conceived as unique form of designing within endless spheres with options for multiperspectivity. Likewise, there are also challenges in terms of navigation and coincidental acts of creation [8]. Individual sculptures may be shared and offered for others to remix, yet so far, few VRpainting platforms provide what is vital for scaffolding and development: joint interfaces within the VR-painting progress to profit from communities of practice. In the field of architecture and training, research suggests problem solving and spatial cognition as fostered by SocialVR learning environments [9]. In another study on 3D Modelling, gamified learning in art educational Desktop Virtual Worlds proved as highly effective in terms of motivational engagement [10]. What has not been analysed so far, are qualities of creativity and cooperation and engaging in desktop vs VR-designing tasks.

### B. VR Concepts of Art Mediation

Regarding VR as means of art mediation, a growing number of projects exist, yet art educational research as tied to such projects is scarce e.g. *KLIMT'S MAGIC GARDEN*, a VR interpretation of Gustav Klimt's *Beethoven Frieze* [11] or *SteamVR Museum of Fine Arts* [13]. Both are complementary examples of little and high guidance in VR-art reception, with

learning opportunities about art as new spatial interpretation (Landscape inspired by Klimt) or copying existing formats as digital twin (museum of Fine Arts). Some projects blur the line between reception and production, with predefined painting scenarios e.g. *Claude Monet – the water lily obsession*, *Lucid Realities* [14]. This may encourage users with little experience of creating, now to do so within VR.

### C. VR Artistic Practice

Artistic practise and respective platforms as virtual galleries are currently evolving, e.g. VR art projects as curated by Kaleidoscope or the platform Museum of other realities. The unique aesthetics and complexity of narratives and metaphors in VR-art projects may be highly inspiring for individual projects stretching from VRfilm to sculptural concepts.

### D. Mental Health Issues as Transferred on Creative SocialVR

Studies on mobbing in Multiplayer VR suggest that when engaging in SocialVR such encounters are experienced as more intensely as compared to desktop based forms of harassment. Solutions here are AI-based exclusion of users not following code of behaviour/utterances [14]. Regarding heterogeneous users of VR, research in the context of VR and autism suggests potential when otherwise facing “social and communicative vulnerabilities”. While solving tasks in unity-based environments, strong learning potential in terms of visual memorisation is suggested. What is striking especially in the light of self-paced learning is that one participant kept exploring VR worlds further, even though apparently symptoms of cyber-sickness occurred. The authors explain this with the “enjoyable, and enthusiastic affective state towards Virtuoso” [15]. But one can also argue, that ability to safeguard individual health/safety boundaries e.g. when facing VR-typical dizziness are weaker than the medium’s appeal and its addictive potential. To brace

VR-users accordingly, meta-affective or self-reflective competences as well as platform-embedded efforts for ethics by design are especially vital in SocialVR.

## III. TAXONOMIES ON CREATIVE SOCIALVR

Current classifications of SocialVR platforms were a vital source for this workshop. So far, basic taxonomies exist, suggesting variations of representing self, ways of interaction and environments [16], [17].

Fig. 1 is suggested as a basic distinction in terms of creative SocialVR. Are individuals designing distinct or is there a joint interface for simultaneous or swift turn-taking? Is the designing process realised within the platform or provides the infrastructure as a whole?

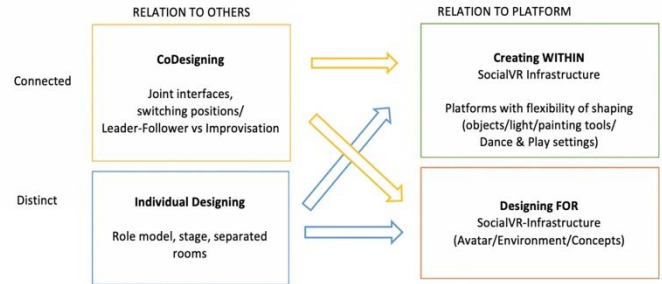


Fig. 1. Creative dimensions. Relating to others and socialVR’s infrastructure

## IV. CRITERIA FOR SOCIALVR-PLATFORMS

The following criteria for SocialVR platforms are suggested to enable participatory, individualised and ethically reflected learning processes for productive and diverse creations.

### A. Accessibility as Key for Joint Creation

Who can access and successfully use SocialVR environments? What are prerequisites for entering (Headset, account, fees), Which forms of navigating are matching physical dis-/abilities (controller-based teleporting vs thumb-stick navigation)? Are users’ individual avatars compatible or is access restricted to platforms avatar designs?

May individuals acquire different roles (host vs participant)? Finally, how intuitive is user interface design for successful navigating and expressing within SocialVR?

TABLE I. Creative Spectrum of SocialVR, starting from distinct to complex collaborative designing scenarios

| <i>Creative Spectrum of SocialVR</i>  | <i>Designing Self</i>                                   | <i>Codesigner</i>                                                     | <i>Creating of SocialVR environments</i>                            | <i>Creating Within SocialVR</i>                                                   | <i>Choreographing for SocialVR</i>                                                           |
|---------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>SocialVR-Dimension</b>             | Designing Self for joint interactions                   | Joint designing interfaces/                                           | Designing VR environments for others to explore                     | Designing and presenting objects as part of existing Environments                 | Choreographing for Music Performance/Dance/ Play                                             |
| <b>Art Educational Settings/Tasks</b> | Analysing aesthetics of Avatars and individual behavior | Role Model for guided Designing                                       | Creating environments, art/history or abstract/ fiction environment | Interior design, Architecture, Sculpture                                          | Scriptwriting, Environment designing, Matching SoundVR and Visuals, staging with avatar cast |
| <b>Criteria for creativity</b>        | Individual Avatar-upload vs restricted choices          | Painterly vs Modular designing/ grouping and copying                  | Choice of aesthetics and tools, script for avatar-based interaction | Restriction vs flexibility in terms of creating and presenting within environment | Variations in VR-Sound/ Choices for lightning/Communicating interfaces with casted avatars   |
| <b>Example Software/ Platform</b>     | VRChat, Mozilla Hubs vs RecRoom                         | MasterpieceVR, SculptVR, The Wild vs Single: Gravity Sketch/Tiltbrush | Mozilla Hubs, Altspace, BlenderVR / Unity                           | Anyland, AltspaceVR                                                               | Björk: Vulnicura Gochfeld et al: Holojam in Wonderland                                       |

### B. Room for Creativity

This refers to spectrum of aesthetic choices, from avatar design, potential for movement to customising environments. Which tools are offered, from sculptural to painterly style? Which textures, colour and shapes are to be crafted by the provided tools? Since VR is strong in spatial multiperspectivity, is the resolution as provided by the infrastructure ready for concepts of zooming in and hovering above? Current platforms vary strongly in these aspects, as more or less restrictive in orchestrating the possible aesthetic choices.

### C. Individualisation

How are individual competences and preconditions considered? How is creative learning progress individualised and supported e.g. via models to scaffold sketching, by individualised tasks and step-by-step guidance. Are diverse portfolio-services offered and artistic inspirations suggested according to individuals' styles?

### D. Interfaces for Joint Designing and Scaffolding

How are interfaces of designers connected? How many designers can be involved? How is turn-taking negotiated? Are role models within VR available and suggested/as on demand-support within VR environments? Protecting certain areas in joint designing processes or highlighting and asking for advice would be vital possible features for collaboration. Is AI-based self-paced learning offered scaffolding individual progress?

### E. Criteria for Ethical Guidelines

This relates to considerations and practices of responsibility for self and others. Our aim is to define SocialVR specific ethical guidelines in the creative spectrum of SocialVR. Are the avatars to choose enforce gender stereotyping? Is ethical appropriate behaviour negotiated or predefined and enforced? How is psycho-sensorial health protected? How is data protection (also on individual artefacts or appearances as recorded in machinima) ensured?

## V. WORKSHOP STRUCTURE AND TAKE-AWAYS

Our workshop comprises 2x90 minutes slots. We are starting with introducing recent studies on creative SocialVR along with the criteria and learning scenarios. Next, participants are testing a variety of creative immersive scenarios, starting from distinct to highly collaborative designing processes c.f. Table I. Machinima and screenshots are collected in individual testing. Finally, we specify and reformulate the criteria as outlined before. The authors build upon research on Mixed Reality embracing art and history education [18] with as strong interdisciplinary focus ranging from reasoning in Multi-Player scenarios to fashion design.

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