

# Criteria for Architectural Learning where Virtual Design Studios are Employed

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## Keywords

VDS , Digital-Environments, Design-Education.

## Abstract

A review of VDS in recent eCAADE and ACADIA papers indicates that they tend to place most emphasis on the communication technology employed. Research is often most concerned with setting up the environment which facilitates the studio. The difficulties in simulating real-time design learning situations in VDS can be compared to earlier years of CAAD research in design education, where most emphasis was placed on the medium itself. However, in the field of CAAD research work, the focus is shifting toward the integration of digital tools with design process, and a rethinking of the role of analogue tools in that process.

The limitations to current VDS are almost certain to change rapidly as more affordable and faster means of communication become available. Nevertheless, underlying pedagogical problems deserve attention in order to direct efforts towards viable models of architectural education where VDS are employed.

This paper assumes a critical stance to the conventionally presented use of VDS, and asserts that the close integration of design-process with new technology will become an increasingly pressing

issue. So that VDS progresses beyond the development of distributed images and a means to communicate design, it is acknowledged that they create a particular learning environment requiring attention from facilitators. The implementation of the suggested criteria will assist the integration of pedagogical engaged-learning objectives with VDS digital technologies.

## Criteria for Architectural Learning where Virtual Design Studios are Employed.

### *Introduction*

While immersive virtual reality (VR) environments eliminate the separation between machine and user, providing a variety of learning experiences (Bricken p.200), virtual design studios (VDS) represent distant existing environments, with which students may actively interact. As the demand for use of VDS in schools of architecture may be anticipated to increase, the problem of reconciling distance-design with fostering an understanding of spatial identity deserves a more critical enquiry than has previously been the case. Most evaluations of the

effectiveness of technology focus on the technology itself - its costs, its complexity, and its feasibility in particular circumstances, rather than examining the effectiveness of technology as a tool for learning. "Effectiveness is not a function of the technology, but rather of the learning environment and the capability to do things one could not do otherwise." (Jones). This paper poses the question of how VDS may uniquely add educational value to the design-learning process.

The proposed use of VDS in a collaborative effort between the authors' respective universities, where available resources are limited, has led to the research of available documentation to elucidate the potential problems in their application to architectural design education. While the integration of computers in the design process is relatively well advanced at both schools of architecture compared to only a few years ago, VDS has not been attempted at these universities to date. The project will attempt to collaborate on an urban design problem set in the host city, and thus will concern itself with setting an engaged-learning problem (Jones) requiring an appropriate response to real spatial context.

Human identification and subsequent design interaction with a place or building presupposes that it has distinct characteristics which contribute to its unique presence or *genius loci*. Moreover, observers impart their own meaning to their perceptions of a place's spatial identity. In the case of VDS, our cognitive and perceptual environment is characterised by the abstract algorithmic space represented by digital and telematic tools used to represent those places.

Is the purpose of VDS only the asynchronous interchange of work prepared in separate locations, or is that design-education be furthered in real time? If the latter is to be the focus of VDS, how will the innate weakness in communicating the context, the 'spirit' and identity of distant place be overcome, if at all? What then can be communi-

cated beyond images or representations of the virtual environment itself?

### ***Problem Context***

A comparative review of VDS as presented in eCAADE, ACADIA and other papers over recent years indicates that, in their present state of development, they place much emphasis on the technology used to facilitate communication. In a 1998 VDS (Donath p.455) it was found that »communication streams between the universities were unfortunately insufficient«, and that »the current state of the art is limited by the bandwidth and remains largely asynchronous« (ibid. p.458). Dave states: »Unless you have access to private and high-bandwidth network, there is no reliable way to predict network performance during synchronous sessions«, and point out various difficulties with presentation, external reviewers and resources (Dave p.112). Other examples have had limited application due to their advanced technological demands (Vasquez p.466)(Shounai p.473). In a related experiment in Cambridge (Richens), difficulties between the collaborating partners are reported with respect to software compatibility and drawing viewers for HTML.

Technical difficulties in building suitable networking and administrative structures and the failure to implement appropriate educational pedagogies have been pointed out as major reasons for past failures in computer based education (Amory).

### ***Definition of Criteria***

Our concern is thus with a VDS environment which is itself a successful 'place-of-learning' and which integrates pedagogical objectives to encourage appropriate responses to a specific spatial context (Knapp p.147).

Combining criteria for successful physical places (Jacobs pp.8-10) with criteria for engaged learning (Jones), we have devised the following list of objectives:

## Conclusion

Difficulties in simulating real-time design-learning VDS situations derive chiefly from limitations inherent in the tools available to the subject institutions. These technological limitations are certain to diminish as more affordable and faster means of communication become available. Nevertheless, underlying pedagogical issues deserve attention now, in order to direct efforts towards viable models of architectural education where VDS are employed.

The current situation can be compared to earlier years of CAAD research and experimentation, where emphasis was placed on the medium itself. However, in the field of CAAD research work, a clear trend in recent years has emerged in which the focus is shifting toward the integration of digital tools with design process, and a rethinking of the role of analogue tools in that process (Bermudez). Analogical thinking and face-to-face social contact (Castells) will remain irreplaceable in digitally orientated architectural education.

This paper assumes a critical stance to the conventionally presented use of VDS, and asserts that the close integration of design-process with new technology will become an increasingly pressing issue. So that VDS progresses beyond the development of distributed images and a means to communicate design, it is acknowledged that they create a particular learning environment requiring attention from facilitators. The implementation of the suggested criteria will assist the integration of pedagogical engaged-learning objectives with VDS digital technologies.

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