

VDS/DDS Practice Hinges on Interventions and Simplicity

A Case Study of Hard Realism vs. Distorted Idealism

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This paper reports on a contemporary and laborious ongoing experimental work initiated during the establishment of a new Virtual/Digital design studio “VDS” in Sept. 1999 by CAAD tutors at University of Petra “UOP”. The new VDS/DDS now works as an experimental laboratory to explore several solutions to problems of efficiency in design teaching as a new digital design studio paradigm, in tandem with CAD/Design staff, DS environment, materials and facilities. Two groups of graduating level students participated as volunteers in this experiment. The first group was comprised of three fifth-year architectural design students while the second group was comprised of two fourth-year interior design students. The media currently in use are ArchiCAD 6.5 as a design tool along with CorelDraw 9 as a presentational tool, running on Pentium III computers. The series of experiments evaluated the impression on architectural design studio tuition requirements arising from the changes brought about by the implementation of the new CAD pedagogical approach (VDS/DDS) at UOP. The findings echo several important key issues in tandem with CAAD, such as: the changes brought about by the new design strategies, adaptation in problem solving decision-making techniques, studio employment in terms of environment, means and methods. Other issues are VDS/DDS integration schemes carried out by both students and staff as one team in design studio practice on one hand and the curriculum on the other. Finally, the paper discusses the negative impact of conventional design studio hardliner teaching advocates and students alike whose outlook and impressions undermine and deplete effective CAAD integration and obstruct, in many instances, the improvement of such experiments in a VDS environment.

Keywords: *Design Studio Strategies, Problem Solving Decisions, Transformation and Integration Policies*

UOP CAAD strategies and current situation:

The college of architecture and art at the University of Petra (UOP) offers skill-based courses in CAAD as part of the curriculum structure, which aims to develop students' abilities, and skills in CAD merely

as an instrument. This practice is widely used throughout many architecture schools in Jordan. Whilst so much is going on in the rest of the world, at UOP we are still on the verge of sifting trends and consolidating new ideas into how we should teach CAAD, e.g. a huge argument is undertaken whether we should teach ArchiCAD or AutoCAD. Concurrently,

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worldwide, some of these ideas have long delivered effective change into the curriculum of architecture. At UOP, CAAD tutors still debate with conventional design advocates whether these changes are applicable or not. The concept of having CAAD as a sole design tool is far fetched to many especially conventional design advocates; again, some who see AutoCAD as the only way of teaching CAAD. They draw the balance of CAAD tuition mostly as what is being used in the practice today; do architecture schools apply the same argument on the rest of their offered courses? Hence, the problems of applying new strategies or curriculum improvements to effectively integrate CAAD, as sole design tool in teaching design and architecture are being confronted with fourfold serious involvement impediments.

Firstly, modifications and drawbacks founded on higher universities management interventions (e.g. private university influential management constitute the sole decision makers). Secondly, budget policies, conventional decision makers allocate funds. Thirdly, higher education regulations derived from ancient governmental universities' sector policies. Fourthly, the "WHAT is CAAD" enduring debate and disagreement between CAAD advocates and

conventional advocates. The dilemma that faces the college of Architecture and Art at UOP is whether to convert it into an AutoCAD training center or to teach CAAD as a design medium mainly using ArchiCAD. How successful would it be to mix pedagogical trends between training centers and university paradigms?

Dealing with the pervious predicaments from CAAD tutors conviction obstructs new interventions together with personal objectives and achievements to deliver effective and efficient CAD course and tuition. Equally, one objective behind employing new CAD strategies aims to enhance and effectively transform current CAD practice into using CAD as a sole design tool. At UOP, this change required three years to achieve to a small extent while attempting to abridge and unstitch the pervious four predicaments to work towards the establishment of a new VDS/DDS, whereby both hardware and software interventions were compulsory.

What does VDS/DDS at UOP mean?

CAD course employment across the curriculum of both schools of architecture and interior design at UOP seem to have taken a great shift into integrating CAAD at either lower level or upper level, thus students

Table 1. CAAD course didactic and paradigm.

Name	Level of Integration	Suggested Integration	Pedagogical Approach	Paradigm	Software
Intro to CAD	1 st year, all students	OK	Lectures, Hands on Exercises One to one tutorials	In class exercises, Group work	Win, MS Office, CorelDraw 9, ArchiCAD
CAD for Interior Design	4 th year	2 nd year	As above	Short Ex., 4-week project	ArchiCAD
Computer Applications for Architecture	3 rd year / 2 nd term	2 nd year	Short Tutorial and hands on ArchiCAD	As above	ArchiCAD CorelDraw 9
Computer-Aided Architectural Design	4 th year / 2 nd term "Arch. only"	2 nd year	Design Brief	1 project/ 4 parts	ArchiCAD CorelDraw 9
Virtual Design Studio (Arch & Interior students)	5 th year Arch & 4 th year ID	3 rd year	Design Brief/ Existing Problem	Urban Design Project	ArchiCAD CorelDraw 9

undertake five CAAD courses but within a big time zone gap forcing both staff and students to work harder each on his turf (table 1).

The new VDS/DDS formation in isolation aimed at introducing the students with skills, knowledge, and abilities in the areas of design, modeling, presentation, and communication seeking towards using the VDS/DDS as a core design medium. A holistic objective was to incorporate VDS/DDS effectively and efficiently both as a sole tool and as a design medium into the architectural tuition at UOP. The concept of VDS/DDS evidently seems to greatly differ from what was suggested by the MIT studio led by Bill Mitchell (Mitchell 1996) or VDS/DDS project organized at ETH in Zurich and HKU (ETH Zurich 1999). Similarly, Wojtowicz (1998) argues that the state of Virtual Design Studio is the result of ongoing experimentation, and that it signifies the physical absence of a studio, by demonstrating creative design collaboration via wide area networks. Although our experiment agrees slightly with Wojtowicz and more with DDS concepts, though we like to view it as not only digital, but virtual in a sense that most of the design process is being processed as cognitive thinking. Ultimately, the terms are similar but the implementation is rather different; though we hope to echo in our own way previous experiences such as the VDS at MIT, and take our work one step further in combining the two approaches.

UOP experimental study

In an attempt to establish new VDS/DDS, CAAD tutors at UOP undertook contemporary and laborious experimental work from Sept. 1999 until present. The new VDS/DDS now works as an experimental laboratory to explore several questions in connection with the efficiency of VDS/DDS teaching as a new design studio in tandem with CAD/Design staff, VDS/DDS environment, materials and facilities. Using as a vehicle a series of graduate groups, one of which was a group of three fifth-year architectural design students, another group was two fourth-year interior design students, all being graduating students at UOP.

The media currently in use are ArchiCAD 6.5 as a design tool along with CorelDraw 9 as a presentational tool, running on Pentium III computers. The new studio addressed Urban Design issues through solving a real design problem in the city of Amman. Parallel to this studio, an urban design studio was undertaken by a conventional group of design tutors.

The Studio's Physical and Social Environments

A computer lab with seven stations was allocated for this experiment. The VDS studio allocation was on the third floor while the conventional UD studio was on first floor. It was noticed after the fifth week of the experiment that this physical separation had a negative impact on collaborative and commutative work between the two studios (VDS and Conventional) and on both staff and students. We noticed that no collaboration has taken place between students. In fact, we have sensed a hostility environment whereby each group claimed to be doing a better job than the other. We concluded that group-based and individual-based learning in CAAD has many directions. The nature of the communication in computer group-based design environment and by individual study is such that each involves a distinct process. During the computer-aided learning events differences in what is learnt due to variations in how the communication and learning occurs are likely to be found. Our study agrees to some extent with Johnson's (1988) issues of co-operative, competitive and individualist goal structures. We found that computer technology furnished isolation and alienation of students when promoting the effective instructional employment of computers. VDS brought about more interaction with teachers and classmates, thus advocating the assumption that CAD is primarily individualistic, although socially we were effectively cooperative. We also felt that VDS may have an effect on educational practice, as interpersonal interaction is a key-influencing factor on instructional effectiveness and classroom climate. In a sense, we have shifted our trends in teaching Urban Design into a less formal

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approach, we felt that the process was less obvious in the beginning of the course, and stayed merely experimental, add hock. The use of computer assisted co-operative or competitive instruction is totally amplified and effectively illuminated by the VDS experiment.

The study brief:

The series of experiments evaluated the impression on architectural design studio tuition requirements arising from the changes brought about by the implementations of the newly CAD VDS at UOP. Students were given an urban site in Amman city, Abdaly Area. CAAD staff used an add hock device to implement strategies. The first was that there was no right or wrong on what, how and why we teach. Secondly, we were not planning on making decisions for the students, but rather offer guidance when we see a real problem. We suggested points of reference such as, Climate, Traffic (busses, service taxi, pedestrian, public cars, services area), buildings around the area, and park. So, the design process that will follow now during this experiment was merely the students approach to solve the suggested problem: Fetch site maps from the Royal Geographical Center; Visit and study the site (site survey and analysis); Study and analyze landmarks at site; Study climate of the area, in comparison with weather forecast received from Amman airport in Marka; Study typology of the buildings such as opening, kiosks, and materials. In addition, students continued to study the history of the site and buildings, using plans and sections; Study the traffic at the parking, to define

passengers' flow, and the different public transportation means on site; Scan maps and convert them into ArchiCAD drawings; Build up the contours by using slab command from ArchiCAD menu; Build up the main buildings, using walls and slabs commands; Incorporate surrounding buildings by using slab command; Furnish the streets and pavements. After that students had to communicate through generating sections and viewing perspectives to make design solutions more readable. They also scanned pictures to show the important buildings on site and later integrated them within their design presentations. Based on previous information, students worked on developing the concepts: They divided the project into 3 main facilities; bus terminal, service terminal, and plaza in which outdoor facilities took place. For 3 weeks students faced problems with printing out their work and finally presented their work using a Microsoft Power Point program presentation.

Students findings, proposal and recommendations based on VDS (Table 2)

Students continued the second part individually after starting as a group, then by evaluating the three projects we found significant differences between the two groups, in terms of amount of work presented, quality of work, and the in-depth design solutions presented. So there were obvious differences between the VDS group and the conventional group (table 3).

Table 2. Comparative analysis between students' findings and recommendations.

Findings

There are different levels in elevation between the traffic light and Quds building.

There is no identified parking for buses, private cars, and service taxis.

There is no identified passage (pathway) for pedestrian.

There is no traffic control at the exits and entrances of the parking.

There is no welcoming park for the pedestrians.

There is no care for vegetation at the area. There are no night activities/life.

Proposal and Recommendations

The need for a proper terminal with identified parking.

Use underground parking for private cars Build 2 terminals; one for buses, other for service taxis to add privacy to each.

Need outdoor activities to add excitement and liveliness to the site.

Keep the Friday market to add excitement to the site.

The study methodology, hypothesis and variables

Observational checklists, one to one interviews with students and staff (whether CAD or conventional advocates), analyzing outcome from VDS/DDS projects in comparison with other similar conventional studios ones, monitoring design process and design behavior while using ArchiCAD or as design studio practice, were considered legitimate vehicles to gather information. Another imposed vehicle used to investigate this experiment was, applying unconventional strategies during design tutorials, e.g. one to one tutorial on printouts and monitor simultaneously, during group observations and feedback. Several key variables and factors initiated and studied were found to have an influence on VDS/DDS teaching and its administration, namely: overall CAD training time (before and during), the level of CAAD courses employment, the efficacy level of CAD

laboratories/Hardware & Software, the overall teaching abilities of computing staff and technicians, UOP/department policies and the feedback response, finally the conventional methods users versus CAD methods users amongst students, defining these further is behind the scope of this short paper. Some examples were hinted during discussion.

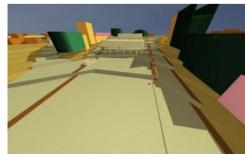
Discussion on paper limitations

It is important to highlight that the intention of this paper was merely to state a direction of which a VDS studio could be analyzed or looked at, so many issues were considered and evaluated but are beyond the scope of this study. E.g., we found that during presentation our students were attacked because they were accused that they do not have all the work on the computer while they have had it on the drawings in the studio, we knew that conventional advocates were eager to disregard many issues just to prove that

Table 3. Sample students' outcome using ArchiCAD.



VDS Group



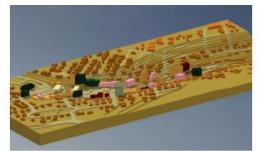
Existing Site



Urban Site



Existing Site



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CAAD did not work. Again, many issues such as compare what the other conventional group has done in the same period, the work undertaken by the interior design students, which needs to be presented in full report, is thus beyond the scope of this paper.

The findings of the UOP study:

The experiment evaluated the impression (see studio's social environment) on architectural design studio tuition requirements arising from the changes brought about by the implementations of the newly CAD VDS at UOP. The findings echo several important key issues, such as: the changes brought about by the new VDS/DDS in design strategies, adaptation in problem solving decisions techniques, VDS/DDS studio employment in terms of environment, means and methods. Other issues are VDS/DDS integration schemes carried out by both students and staff as one team in design studio practice on one hand and the curriculum on the other. Finally, the issue of conventional design studio hardliners teaching advocates and students alike whom outlook and impressions undermine and deplete effective CAAD integration and their negative impact obstructs in many instances the improvements of such experiment/VDS/DDS.

At start the researchers team suggested a hypothesis to this experiment in which it states that the methods and approaches administrated at VDS/DDS would influence the level of complexity, which governs a successful design studio problem solving activities practice. The null hypothesis suggested that this might result on an unrealistic approach towards the transformation of the conventional teaching methods into an idealistic CAD approach during VDS/DDS. One of the results of this experiment demonstrated the highly tranquil and continuing importance of the conventional design tool and human interventions in architecture design studios tuition and its interrelationship to art versus the limitations that the technological tools such as VDS/DDS have on effectiveness, efficiency and productivity in creating a balanced tuition. CAD balanced tuition depends on

the following variables: a good level of students' performance, CAD attitudes, knowledge, skills, and outlook. Other variables sought to be important were, the interrelationship and interdependence of the VDS/DDS on other CAD courses delivered in the curriculum and the level these courses contribute to the evolution of the VDS/DDS as a CAD core course or as design course in the curriculum.

Further results clearly indicated that CAAD interdisciplinary team, VDS/DDS environment, and administered materials (hardware and software) were particularly fundamental in generating harmonious strategies in the VDS/DDS. The study emulated the convention that full integration of CAAD into architectural design tuition has proven to be successful if implemented at early stages in architectural curriculum, pending all other circumstances and impediments discussed previously in this paper were overcome and fully resolved.

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