New opportunities for the CAD specialist tutor to lead transformed design processes in the studio and facilitate collaborative projects across the disciplines ***

I consider this role to be of even greater, continuing importance today as follows:
By helping the body of tutors and lecturers to perceive and embrace the benefits and means of integrating new technologies into the curriculum:

- By nuturing the comprehension and acceptance of the potential of 3D and 5DCAD processes, to transform the way the architecture and associated professions and trades might develop, negotiate, and deliver designs and their implementation.
- I also believe that, though students today are very IT literate, they still as in any subject need to be assisted in their learning process by the CAD specialist teaching the significant concepts and potential of various software solutions and ways of working. This can cut down time wasted in guesswork and laborious manuals and help them select for the task, appropriate processes from knowledge of the mass of options.
- Collaborating to assist colleagues as to how, where and what to isolate and select as of key relevance to their particular studio project briefings, tuition/tech. support,
- How to define the relevance to students and specify the submission requirements in a way students will realise what aspects of the software they need to employ.
- Re new technology - deliver and support opportunities for tutors to improve their comprehension, ability and knowledge, to successfully carry out and perceptively reward and guide students through crits. marking and feedback.

For an example of my use of this process in practice, please see page 2 below *.

Beyond CAD, the CAD specialist also has the opportunity to take the course team forward into promoting the benefits of Virtual Construction™ as in Building Information Modelling, incorporating and facilitating involvement of all professions in the construction process, taking into account: quality of design, structural and economic feasibility, project management, etc. to achieve '5D' economies of time and cost, and reliable/accurate representation and realisation of the design.
A first way forward to bring education to the forefront of developments, might be to develop collaborative studio projects, including related built environment disciplines. The new V.C./B.I.M. suites of softwares available such as Graphisoft® Constructor™, Estimator, DYNA PROJECT and ARCHICAD® with MaxonForm, now offer the construction industry the ability to move forward into the 21st century in parallel, (if rather later), to fully transform and advantage the whole construction process, delivering reliability and economy, through accurate data throughout all collaborating professions and trades. Since the new softwares are so well designed and use easy, visual communication and friendly, user control at all stages and actually deliver what they promise, all professional and trade members of the team are delighted.
Relevant tutors from all fields might initially explore a small trial simple project together, adopting their relevant roles, as a learning and development vehicle. From this knowledge and experience the CAD specialist should be able to assist them to define new collaborative projects to fit these digital times.
In the last 18 months Construction companies, clients and developers have been proving the phenomenal benefits of these new approaches with their design and construction teams. ** www.graphisoft.com

**NB Architects, as the most relevant profession to generate the essential integral models, (for these new Virtual Construction™ processes) in addition to developing the design, would thus hold the knowledge, expertise and ownership/saleability of the VB. This could be used to empower their relative position. All output and manipulation of the associated model, database, visualisations, explanatory info. and working drawings would be constantly updated and retained under control of architects, so enabling their expansion into the fields of other professionals at an authorative level, or selling on the VB model. BIM / VB, by also incorporating early concept design, shifts the distribution of workload in the project. Thus architects are finding they are now able to negotiate, charging clients for more informed, comprehensive early concept designs.*

*** Jen Kokosalakis of JenKo – Education Consultant j.kokosalakis@ljmu.ac.uk

*** An actual example – Quite some years ago, commencing a CAD specialist role, I quickly realised many issues needed to be addressed:*

1. *There were no requirements in the curriculum for students to study this.*
2. *Students had to spend additional time on top of curriculum to proceed.*
3. *If they spent time developing CAD knowledge and application, they might jeopardise their necessary time to meet project assessment criteria.*
4. *Once they realised it was not compulsory, numbers dropped off.*
5. *Tutors were generally not even informed about CAD at best and antagonist with it at worst, so students tended to suffer and not be fairly assessed in that respect.*

To address these problems, I instituted a number of processes to encourage the support of design studio tutor collaboration:

A. *to define selected CAD facilities/processes, which would relate to and enhance aspects of the projects.- An example task - A project to research the context/perimeter buildings of the site to ascertain characteristic materials and facades and thence to design a building whose materials were either sympathetic or contrasting clearly. We defined obviously to focus on how to associate colour, texture, reflectivity/transparency etc. to surfaces and how to sample existing wall surfaces and create new textures.*
B. *Seek agreement to be present on the 1st run to explain the CAD element in the tutors' briefing*
C. *Define with the tutor, inclusion of assessment criteria for the CAD work specifically.*
D. *Begin a CAD awareness program initially for year tutors who became CAD work champions and then target the rest of the crit team.*

This process was initially considerably harder than persisting with a series of optional lectures, but led then to an acceptance of reform and introduction into the main stream of teaching and assessment.

An important consolidation was subsequently, to briefly research to review comprehension and attitudes of staff towards use of CAD. This revealed amazing progress and turnaround from negativity to gradual self-confessed valuing of CAD. It also helped them self-confirm this.

I quote extracts from the informal interviews, which reveal tutors' comprehensive progression:
" You are able to get into using ArchiCAD quickly, looking at different orientations to test your designs. This definitely helped me to consolidate my understanding and skill, not just the students".
"more fluid and easier to get a handle on key features in 3D, to turn and make changes"
"a big difference in the 3D aspect of modelling and designing, opening up the potential on the visual side of the project"
"surprised to find there are actually some advantages eventually when you get past the basics"
"Once the basics of the model were in place the possibilities became infinite. Because of the complexity, (of his competition design) it would be impossible to draw this, without such a design and exploratory tool. You can design because you see it. You can keep changing things as information comes from viewing the progression of the modelling. It also handles the complexity of matching so many points. It may be time consuming, initially, but it is rewarding. One great advantage is that you can put anyone to work on it, and the quality remains the same, and outputs as immaculate quality of accuracy with the laser, (whereas on the drawing board, a novice's work would be immediately apparent."

Earlier related papers and new case studies are available from the author, including "Learning in a Virtual Building™ */ Building Information Modelling Environment" 23.03.05