

## TOWARDS A SOCIO-CONSTRUCTIVIST APPROACH TO LEARNING AND TEACHING WITHIN OLT ENVIRONMENTS

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### **Abstract**

*The use of on-line design journals has the potential to promote socio-constructivist approaches to learning and teaching. In the first semester of 2005 I set-up an initiative in my Informational Arts unit at QUT where students were encouraged to publish on-line design journals. The students were asked to research examples of applied research and document their findings to share with their classmates. To help them do this I provided them with links of numerous national and international applied research centres. I also encouraged them to review my own design journal that I use to publish references to significant cultural, philosophical and technical works. I was keen for the students to start situating themselves as practitioners and researchers within the broader field of design enquiry. Students in design programmes often find it difficult to make connections between their student practice and the practice of professionals and researchers. This initiative was designed for this reason, to support the students in their discovery. The students were able to use the publishing process as a method for understanding their own enquiry and research interests. They were able to discover their own points of departure from existing research through personal reflection and peer feedback. The use of on-line design journals seemed to have a number of benefits: they allowed students to incrementally find research directions and establish research paths; they provided students with a vehicle for promoting informal debate and discussion; and they helped them to establish their own voice as practitioners and potential applied researchers.*

### **Keywords**

*socio-constructivism, informational arts, constellations, critical reflection, weblog, participative centred learning, knowledge co-construction, applied research, coalescing agents, RSS syndication, folksonomies*

## **Introduction**

In the first semester of 2005 I set-up a learning and teaching initiative to support Communication Design students at QUT. The initiative was designed to help students make connections between their practice and the broader field of enquiry. The initiative aimed to investigate a strategy for promoting a socio-constructivist<sup>1</sup> approach to education. As part of this strategy, I explored the potential of a learning and teaching environment for empowering students to decide their own terms of engagement and participation. I conducted the initiative using an alternative system to Queensland University of Technology's (QUT) online learning and teaching environment (OLT). It is my contention that

commercial learning environments, such as OLT, are fundamentally incapable of supporting this kind of initiative: due to their informing design logic and preoccupation with information transmission, rather than knowledge construction. Instead, I have created a solution centred on the use of student on-line journals and in-class critical reflection.

A central feature of my initiative involved students publishing and sharing their work with peers. Although this is a straight-forward situation, I decided that the solution should be one that could be evolved by the students as their learning needs emerged. I made arrangements for students to set-up their own on-line journals, either as Web sites or *Weblogs*. I made sure that they had complete control over their environments and didn't try to impose any content or organisation restrictions on them. I was keen to promote a situation where students that already had on-line journals could continue using them and for students that didn't, to start using one. There appeared to be little benefit gained from limiting students to administrative requirements whose purpose was to foster initiative. Although technologically my solution was simple, pedagogically the implications were significant. Through this act I attempted to use information and communication technologies (ICT's) to foster a de-centralised, learner centred and participative learning environment. Dr. Viens Jacques believes that initiatives that foster student autonomy, collaboration and co-construction of knowledge can be described as being socio-constructivist. He believes that while there is a focus on socio-constructivism within education that such initiatives are not without risk:

The assumption that the way to go is to integrate active learning and socioconstructivist approaches is now widely accepted in the domain of education. But doing so is a very complex task since, for most of us, the targeted socioconstructivist pedagogy implies a major rupture with our traditional vision and practice of learning and teaching (Viens, Breuleux et al. 2001).

For this initiative, students were able to individually decide their own publishing options: the choice of journal technology, its configurations, organising taxonomies and visual presentation; to share their journal contributions with their peers, both on-line and off-line; and for personal reflection as well as critical and collaborative engagement. In this way the students' journals were able to become sites of peer-collaboration and knowledge co-construction. In a questionnaire that I ran after the trial had ended, an Informational Arts student commented that:

It was useful to view my peers' journals and to contribute to their research by providing comments in the commenting section - and vice versa. I found that even though we have different research perspectives - key aspects overlapped.<sup>2</sup>

The initiative had aimed to facilitate an experience set in the context of professional practice. In this way students were able to engage with their practice situated within a broader context, towards deeper levels of understanding and application of knowledge. From here, I believe that this initiative could be extended towards collaboration through the use informal research networks and data *coalescing agents* such as *RSS Syndication* and information *folksonomies*.

## ICT-Based Learning Environments

The underlying logic of contemporary on-line learning and teaching environments has been informed by a *systems* approach<sup>3</sup> to design. Despite the considerable effort devoted to their evolution and the focus of this effort on flexible learning, on-line learning and teaching systems appear to be limited to the task of transmitting information. In her essay on the evolution of ICT-based learning environments, Rosa Maria Bottino describes this orientation as, firstly one that sits in opposition to constructivist theories, and secondly one that fails to sufficiently accommodate social interaction and practice contexts within the learning and teaching environments. Bottino goes on to critique the information transmission model of ICT-based learning and teaching systems, and suggests that approaches that privilege learners as active participants should be pursued:

One of the major forces which has driven change has been the assumption that meanings are lost if learning is simply seen as the transmission of information. Learning is progressively considered as being based on an active exploration and personal construction, rather than on a transmissive model

(Bottino 2004).

In the current milieu of on-line learning and teaching environments, ICT architects appear to be caught in a bind between a requirement to provide generalised system *features* and a will to embrace contemporary educational strategies. In the light of a systems approach to design, a compromise appears to have been made that privileges administrative robustness and security over (student) agency and engagement. Baltasar Fernandez-Manjon and Pilar Sancho have further described aspects of this problem as one where "the requirements of a commercial learning environment are too diverse to be provided by a single monolithic system" (Fernandez-Manjon and Sancho 2002). The result is that the ability for students to collaborate and maintain autonomy within such centralised systems has been limited to superficial sharing of data over networks within closed publishing contexts. Without a serious interrogation of the underlying imperatives governing a systems approach to ICT design, learning and teaching within these environments is destined to remain locked in the administrative mode.

## The Informational Arts Initiative

The learning requirements of the Informational Arts unit at QUT are quite unique. Unlike most units, students enrolled in the 3<sup>rd</sup> year Communication Design unit are both fluent in the process of developing design concepts, and fluent in the process of realising them in functional forms. They have, as Richard Buchanan describes it, strong *clinical* and *applied* design skills (Buchanan 2001). They are able to devise complex interaction design initiatives and implement them as operational prototypes. Despite this, these students generally find it difficult to situate their practice within a broader field of enquiry. They are focused "on the problem for action that the designer faces. To solve a particular, individual design problem" (Buchanan 2001). So while they are able to develop design *solutions*, they aren't always able to identify the relevance of their solutions to existing research and practice. For this reason Informational Arts students are encouraged to situate their practice within an *applied* research context. This gives them the insight to start engaging in the broader field of enquiry in a more active way. Through this approach the Informational Arts students are able to begin leveraging their deep clinical and applied understanding for broader and more fundamental concerns.

As part of this initiative I arranged for students to survey existing applied research projects within the interaction design field. I made available numerous links to national and international applied research centres, as well as having them review my own comprehensive interaction design journal.<sup>4</sup> Students were then required to develop a speculative project as a variation on an existing research direction. They then used their own on-line journal to organise and share their findings with their peers. As the semester progressed they were able to amass collections of related interaction design work, whose significance to their project they could discover as their enquiry evolved. In this way, the students were able to use their on-line journals to refine their understanding of themselves as practitioners while discovering their own points of difference from the existing interaction design field.

The unit aimed to promote an awareness of the connections between student's experience in a learning context and professional practice context. The students participating in the initiative found that the act of reviewing and refining applied research gave them insight into the role of being a researcher. They felt that the opportunity to reflect critically in their journals, and through in-class discussion, helped to reveal tacit concerns informing their practice. The opportunity helped them to elaborate their understanding of the field of enquiry, as well as help to consolidate their existing strategies for their eventual industry engagement. In his essay *Higher Education: A Critical Business* Ronald Barnett describes the need for students to strive towards higher levels of criticality as been essential to the development of deep understanding:

[critical reflections need to] situate the action in the wider world of social arrangements, policies and public interests, and students [need] ... to envisage alternative structures, systems and possibilities for collective action. Unless reflection rises to these higher levels of reflection, the student's reflection would amount to decisionism and operationalism. Simply being able to identify a range of alternative

courses of action and to supply reasons for the chosen course of action does not attain the higher levels of criticality (Barnett 1997).

Through critical reflection, Informational Arts students were able to more effectively consolidate their understanding within a practice environment.

## Software Feedback Loop

The development of the Informational Arts initiative is guided by a two-way process: firstly, the software design process is informed by its use in a learning and teaching context, and the secondly, the learning and teaching context is informed by software design decisions. Based on the success of this initiative, I intend to continue investigating the potential of socio-constructivist approaches to learning and teaching. I also plan to incorporate the insight that I have gained from the students' experiences to inform further initiatives. Learning and teaching tools have the potential to promote new and innovative models of practice. Bottino describes this phenomenon thusly:

The way in which technology can be used in social practice can prefigure new functions to be included in the technology. These new functions and opportunities can change the models of practice, which have inspired the construction of the technology itself. It can be noted that the development of new models of practice can prefigure new ways of using existing ICT-based tools that can change the role that such systems has previously had and, consequently, the mediation that they can offer to teaching and learning processes (Bottino 2004).

Bottino appears to be describing a situation where technology users are not able to have any real input into the design of the learning and teaching tools. In cases where users are able to participate in this process, such innovation can potentially inform the ICT design process. In the case of the Informational Arts unit initiative, I am not only able to reconsider new ways of using the ICT tool but also able to reconfigure their use.

The Informational Arts initiative appears to offer further learning and teaching opportunities and through reflecting on its operation and through considering informal student feedback, I believe that the unit can be extended in various ways. While it appears useful for students to maintain an autonomous relationship to their peers, I believe that providing more explicit opportunities for them to collaborate would be useful. One way of doing this would be through the arrangement of research networks. For cases where students are engaged in common research enquiry, it might be useful to have them pursue their research collaboratively. I believe that this might work best in situations where students were able to flexibly form and dissolve associations based on their changing requirements. Where common research artefacts are produced joint ownership could be attributed, where individual research artefacts are produced individual ownership could be attributed. Overall, student performance could be evaluated according to their total research contribution (contributed collectively and individually).

One way of supporting these flexible arrangements could be through the use of coalescing agents, such as RSS Syndication and information folksonomies. RSS Syndication is a publishing method that allows information to be easily distributed on-line. Its main advantage is that unlike traditional publishing methods, RSS Syndication offers the ability for subscribers to integrate content according to their own needs. It also offers an alternative to the traditional producer/consumer relationship of publishing. RSS Syndication allows both producers and consumers to subscribe and syndicate information. In a learning and teaching situation, this ability has the potential to foster informal research networks. Unlike formal group arrangements, networks formed through syndication are able to be formed and dissolved at will. Once a network has lost its relevance, its members are free to form new networks through the simple process of un-subscription and re-subscription. James Farmer at Deakin University has recently discussed the potential of RSS syndication for promoting a semi-latticed interaction model (Farmer 08-06-2005) for Weblog association. Farmer believes that "the number of potential interrelationships between writer and reader is almost unlimited and drawn from control being centred on the user" (Farmer 08-06-2005). In this way, inter-connected on-line student journals could help to provide shared

and autonomous contexts of enquiry within fluid networks of association. Folksonomies also provide a useful technique for promoting the formation of research networks. Folksonomies are complex indexing structures that are able to evolve and change dynamically. Unlike taxonomies, folksonomies are created collectively through the intersection and overlaying of multiple indexes. Folksonomies form through the process of keyword *Tagging*. Tagging allows users to both organise information and create information aggregates through category assignment. Students organising information in this way are able to make connections between their enquiry and the enquiry of their peers'. They are able to identify varying degrees of relevance to their own enquiry through category groupings and keyword association. In this way a situation called Legitimate Peripheral Participation (LPP) is able to emerge. Students that observe associations between their taxonomies and their peers' are able to contribute to their peers' folksonomies. In so doing they may be able to evolve common research endeavours and research networks. The adaptive ability of these coalescing agents offers significant advantage for learning and teaching situations. Their ability to facilitate dynamic connections can support students forming their own research networks. Their ability to foster LPP can help students evolve informal and loose associations. Through supporting students in their formation and negotiation of research networks, coalescing agents have the potential promote a socio-constructivist approach to learning and teaching.

Reflection on the use of learning and teaching software has the potential to suggest new models of practice. In open software situations, this reflection has the potential to inform the design of new software operations. Where environments can be flexibly reorganised, learning situations can be re-ordered to suit the needs of their users. Students working in this situation are able to maintain personal autonomy and at the same time are able to foster new and emergent collaborative networks.

## Conclusion

The Informational Arts unit initiative was designed to facilitate a learning and teaching strategy centring on research and critical reflection. The initiative was informed by a socio-constructivist approach aimed at promoting a learner centred and participative learning environment. Students were able to engage autonomously with their peers within a shared learning context. They were encouraged to discover ways to situate themselves within a professional and/or post-graduate context through the review of applied research projects. After considering informal student feedback and general reflection, I believe that the initiative could be extended to promote greater opportunities for student collaboration through research networks and the use of coalescing agents.

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## Endnotes

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<sup>1</sup> A viewpoint derives from the notion that humans are active constructors of knowledge and meaning.

<sup>2</sup> Anonymous response by Informational Arts course-unit student to in-class questionnaire.

<sup>3</sup> A process that frames understanding in terms of abstract organisational structures.

<sup>4</sup> <http://www.constellations.co.nz>

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