From insular to connective knowledge: a strategy for embedding new media for cultural applications in design education for the creative industries

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Abstract

Interdisciplinary practice requires an understanding of a complex set of associated fields. Within design education, the establishment of an interdisciplinary framework could be described as a series of shifts from discipline-specific to interdisciplinary knowledge. These shifts rely on articulating existing practice and defining the patterns of association which are made imperative through interdisciplinary practice. In traditional design education, disciplines have been framed by the system of education and occupation while interdisciplinarity has been viewed as knowledge without organising patterns and frameworks (Weingart and Nico, 2000). Breaking away from the binds of occupation and discipline-specific design education has been made possible by new models of education, an example being the creative industries.

Using the museum exhibition environment as a testing ground for interdisciplinary theory and practice, this paper will define the new media descriptors which impact directly upon design education. This impact will consider the patterns which are present in terms of educational models which could be used to analyse them.

This framework is then tested and described as a shift from insular to connective knowledge where disciplinarity is embedded within an interdisciplinary framework for new media in design education for cultural institutions.

Introduction

Interdisciplinary practice requires an understanding of a complex set of associated fields. Within design education, the establishment of an interdisciplinary framework could be described as a series of shifts from discipline-specific to interdisciplinary knowledge. These shifts rely on articulating existing practice and defining the patterns of association which are made imperative through interdisciplinary practice.

Two fundamental notions which underpin this exercise are that disciplines have framed the system of education and vocation, and that interdisciplinarity does not mean production of knowledge without organising patterns (Weingart and Nico, 2000).

It is clear that the disciplines of design have responded to systems of education and vocation, contextualising practice and influencing education in an iterative fashion. While traditional design education has attempted to move away from the iterative...
bind of education and vocation, they have faced the challenges associated with changing technologies, changing work practices and the position of creative endeavour within industry.

Ball describes the role of higher education in the creative industries as one which helps students and graduates to, ‘learn about the industry and how to access training and development opportunities.’ (Ball, 2002, p.11) The educational issues within the creative industries could be said to include the changes to the notion of university as a higher education institution, the power–knowledge relationship of expert and novice as traditionally found in design education and modelled through studio practice, the deterritorialisation of content across a number of disciplines, the dematerialization of experience spaces and the abstraction of pedagogy and epistemologies.

Using the museum exhibition environment as a testing ground for interdisciplinary theory and practice, this paper will define the new media descriptors which impact directly upon design education for the creative industries. This impact will consider the patterns which are present in terms of educational models which could be used to analyse them.

This framework is then tested and described as a shift from insular to connective knowledge where disciplinarity is embedded within an interdisciplinary framework for new media in design education for cultural institutions.

**New media descriptors for design education**

The new media descriptors which best define and explore the context of existing practices in design education could be considered to be those which intersect the fields of information technology, design, social science and psychology. These could be described as immersion, telepresence, remediation, emergence, convergence, ambience, augmented reality and ubiquity. Each of these descriptors has embedded within them notions of spatial difference, technological advancement, social conditioning and experiential manipulation. New media design education must identify the basis of interdisciplinarity and define discourses in terms of a visual literacies for their graduates.

**Models of learning in design education**

Design education has traditionally relied on a studio model of teaching where one-to-one advice from the specialist to the novice could be imparted in the form of mentoring. This form of knowledge acquisition was time consuming and difficult to objectify (Kuhn, 2001). The restructuring of higher education from the 1980s onwards ensured that the studio held a diminished place in the practice of design education. The contemporary university has little regard for the time consuming teaching practice of design studio (Loveday, 2002).

As pressure has mounted on design education to respond to changes in the university, many implicit practices have been made explicit. In particular, the methods used by designers to research, create and develop works are now being documented in such a way as to provide models of practice for future students (Frascara, 2002). A result of
this clarification has been the ability of other disciplines to adopt the studio model. Kuhn outlines her adoption of the studio model in the teaching of software engineering at MIT. To enable this model to be used, Kuhn has defined the characteristics of studio which can be considered transferable to an interdisciplinary practice (Kuhn, 2001). Kuhn provides an example of how the implicit models of design education need to move from an insular to connective knowledge base in order to be effective for education in the creative industries.

Modernist design teaching practices suggested that the field was containable and knowable through systematic, definable outputs. In this way, diagramming led to concept, sketching to design development, technical precision to detailed and, representation through perspective to figural and scaleable understanding, and presentation to the dissemination of an idea to a knowing community. Post-modernist practices in architecture and design heralded an era of insistent uncertainty in the field of knowledge made available to students. Venturi, Scott-Brown, Alexander, Brand and Tschumi, provided tomes to the flexibility and interdisciplinarity afforded the reconceptualisation of design practice. (Brand, 1994; Alexander et al., 1977; Tschumi, 1994a; Venturi and Scott-Brown, 1997) Their approach was to provide a language which could be described, illustrated and understood by those contributing to the landscape of architecture and design practice. Their contributions pointed to the necessity of describing the discourse through the forms it creates.

Terzidis describes how the notion of morphing can be used as a device to enable the expression and identification of design through its own form. By identifying the characteristics of the field, in his case, architecture, one can view instances of a continuum which derives from the past and projects into the future. Morphing then is not about change but about a particular moment in time when the past and future overlap within the same form (Terzidis, 2003). In this way, design discourse and design education can be described as requiring articulation of the characteristics of their field which allow them to be expressed in terms of their forms.

New media practices have profoundly affected the ways in which design education is conceptualised. A result of the dot.com push, new media education programs have struggled to find a voice to articulate the interdisciplinary nature of their fields; the knowledge, concepts, skills, methods and methodologies which constitute expert knowledge and practice in the field (see CADE, ACUADS). [1]

At the same time, more general educational paradigms have emerged from and developed in response to changes in society, culture and politics. Just as the functionalist method of defined, constructed knowledge was well suited to the emerging landscape of post-industrial western society, the social constructivist method of defining educational experience could be considered the result of a broadening of social and cultural concerns over the past thirty years (Watkins and Mortimore, 1999a).

While in theory a shift in the educational paradigm has produced a greater resource from which to draw experience for new media design education, this research shows that this been done in an implicit rather than explicit way. The educational theories which underpin a social constructivist view or design education are evident in
educational programs in the sense that students are asked to draw from experience, are given opportunities to develop the haptic in their education and are engaged in spontaneous and independent learning. What has yet to be articulated is the educational program which identifies the aims and objectives of design practice as an educational environment and creates ways of developing experiences through the communication, representation and visualization forms it adopts.

In terms of the creative industries, Ball describes this as a shift towards ‘an outward-looking culture providing a bridge with the real world, extending beyond the formal under-graduate experience.’ (Ball, 2002, p.112–12) This could be described within the further education paradigm where educators are addressing issues of linking learning to future employment, linking learning which takes places in different contexts, realising the learning potential of information technologies and other resources, and providing learning opportunities which are flexible enough to ensure access to and motivation for lifelong learning (Young and Lucas, 1999a).

Given the complexity of interdisciplinary practice it is necessary to consider how knowledge is managed in higher education environments to guide the development of education strategies for new media programs. In terms of the creative industries, interdisciplinarity could be framed within Lattuca’s typology, where education, including on-site and off-site experiences could be considered trans-disciplinary, resulting in courses which cross disciplines and propose research questions with a-discipline outcomes (Lattuca, 2001). This could be described as a way of articulating the moments in time when the past and future overlap within the same form.

In educational settings the impact of context has been shown to affect the ways in which people learn, thus influencing the teaching strategies which are adopted (Talbert et al., 1993 in Mortimore, 1999). When knowledge is seen as dynamic rather than static, educators must select specific representations, concepts and methods based on their understanding of the contexts of instruction and the proper knowledge of what is likely to be affective for particular learners (Carlsen, 1991 in Mortimore, 1999, p.6). In this situation, the modernist paradigm for design education can seem somewhat limiting.

The construction of knowledge and meaning as unified, objective and transferable sets up a dichotomy between didactic transmission methods and evolving practices. As experienced teachers tend to focus on activity and content, the notion of beginning with a goal and moving through planned actions toward anticipated outcomes is often a difficult methodology to adopt. In traditional design and architecture education, method is tied to practice and so each academic, knowing the outcome of practice, implicitly knows the content required and the activity which will derive this content. In this environment asking academics to analyse and critically adopt new methods can seem a waste of time. In the complex environments which are created in design education, the direction can be considered to lead directly to outcome before goals have been considered. In this way, the goals of education become symbols of and justifications for what has already been achieved (Watkins and Mortimore, 1999b).

In the creative industries the need to establish models of education which can predict, discard and evolve as necessary is predicated upon a firm understanding of the nature of the interdisciplinary field. In a trans-disciplinary environment where courses and
research questions cross disciplines, the knowledge required to establish the field revolves around a variety of methods and processes, thus limiting the opportunity for the expert–novice scenario in the learning relationship. Young and Lucas describe how, in evolving models, the creator and disseminator of knowledge is not necessarily an individual but a number of people at differing levels of expertise who contribute to the formation of an evolving knowledge base. As further education research addresses the diversity of learners and the contexts in which academics find themselves, Young and Lucas suggest that the nature of further education must impact on the research which comes from it (Young and Lucas, 1999b). Recognising that research is an outcome of the visual literacies of design education and can be expressed through both static and dynamic forms provides a speculative space for new creative practices to emerge.

As a design educator, the interdisciplinary practices of the creative industries present great opportunities and increasing challenges. In order to consider some of these issues and how they can be embedded into a developing educational program, this paper considers the exhibition environment as a model of trans-disciplinary interdisciplinarity.

Exhibitions are a visual communicative form. They embody multiple learning tasks and complex interpretive activities in an interactive environment. In the museum, exhibition development is often prescribed by evaluation methods and museum accountability processes. While this enables the accountability of budgets, it does not acknowledge that while exhibition development occurs through the construction of text and context, it is ultimately consumed through social practice.

As with the design of architecture, exhibitions are developed over long periods and utilise the expertise of many professionals. While their original intentions will include the making of meaning and the communication of cultural products, the point at which governing bodies agree to fund and construct exhibitions is reliant upon a series of compromises in planning processes[2]. The consumption of an exhibition can be considered independent of its development in the sense that the perceived success and value of an exhibition may be affected by conditions and situations wholly outside of the framework of development. Even so, the designer’s inability to articulate a goal and present concepts for how that goal may be attained can have considerable impact on the process of design development and approval.

The exhibition environment as a further education environment suffers from a lack of explicit pedagogy through which to describe design decisions (Hooper-Greenhill, 2000). This lack of explicit pedagogy undermines the expertise of the designer and the interdisciplinary team as a common language for conceptualisation is not used. This paper posits that research into the interdisciplinary environment of exhibition development could be framed within a social constructivist paradigm and could use cultural studies methods of evaluation and articulation in order to develop a visual literacy for new media in exhibition development. As cultural studies is interested in enabling and regulating institutions and less interested in the formal social arrangements in and through which culture is produced, enacted and consumed (Lister and Wells, 2001), it would appear an appropriate method to focus on emerging practices within established historical contexts.
Cultural studies attempts to understand the relationships of cultural production, consumption, belief and meaning to social processes and our institutions. Cultural studies analyses and describes changing power relations enacted around issues of gender, society, race and ethnicity. It examines issues in terms of ways of seeing, imagining, classifying, narrating and other ways of investing meaning in the experiences which cultural forms and practices provide (Lister and Wells, 2001).

While cultural studies can be used to describe the theoretical framework of exhibition design development, the processes by which meaning is ascribed to experience are here articulated using a functionalist method. The functionalist method allows the development of typologies which acknowledge the impact of visual imagery on the construction of meaning (van Leeuwen and Jewitt, 2001). By considering the formal elements and structures of display the functionalist method provides an explicit language for describing the ways in which images communicate meaning.

For the purpose of establishing an educational pedagogy based on the heuristics of exhibition consumption, the functionalist methods can be used to analyse the text, context and social practices within which exhibitions are designed and developed. In order to carry out this analysis, exhibition development and design education can then be considered in terms of the text, context and social practices which surround and define experiences and produce meaning. Young and Lucas describe this as:

change in context
change in the relationship between education and entertainment
institution and audience; private and public space; curator and visitor

change in text
power/knowledge basis for transmission approach

changes in social practices
visitor expectations; options for entertainment; access to collections and information
(Young and Lucas, 1999b)

Interdisciplinary design practice and education can be conceptualised in terms of a series of shifts away from traditional notions of professionalism. As educators move from an insular knowledge base (characterised by the types of teaching environments and experiences familiar to us all), they begin to establish both a connected knowledge base (interdisciplinary patterns of knowledge) and a connected learning experience (Young and Lucas, 1999b).

Ball describes how this articulation of experiences must be encouraged in the curriculum in order to develop ‘capable, flexible, adaptable, lateral-thinking and creative individuals’. As students will not necessarily recognise these outcomes nor will they relate learning to their own development, higher education can give students confidence in themselves and their achievements. (Ball, 2003, p.17).

In this paper, the five shifts from insular to connective education have formed the basis of an iterative process of interdisciplinary design curriculum development and evaluation. These five shifts are described as shifts in terms of:
• from subject knowledge to curriculum knowledge – how specialisation relates to their subject specialism and how key skills can be developed through the curriculum
• from teacher-centred to learner-centred pedagogic knowledge – the development of skills to both transmit vocational knowledge and develop expertise in managing learners
• from intra-professional knowledge to inter-professional knowledge – the need for teachers to relate specialist knowledge and support students in gaining access to other forms of expertise.
• from classroom to organisational knowledge – working in teams with collaborative skills, with sufficient knowledge to enable links between local, community and government partners
• from insular to connective knowledge – focusing on learning outside and beyond the institution (Young and Lucas, 199b, p.102-103).

Using this framework as a basis for an action research process, the following five studies were undertaken over two years from 2001 to 2002. The process included data collection, analysis, feedback, program drafts, program implementations and evaluations of outcomes. Each study informed the next educational program offered. The outcomes were broadly articulated in terms of text, context and social practices, then described through the mapping of shifts from insular to connective knowledge.

Research Studies One & Two: University of Queensland and University of South Australia

The first two studies explored the concepts, skills, methods and knowledge which would be required to undertake interdisciplinary new media design projects in the field of museum exhibition design. The studies were developed into the form of an undergraduate design studio program which introduced students to the principles and practices of exhibition design in cultural institutions. The design program was tested at the University of Queensland (UQ) and the University of South Australia (UniSA).

The program was delivered over two full days per week in the first two weeks of Semester 2, 2001 at UQ, then over the course of 10 consecutive days at the end of Semester 2, 2001 at UniSA. The course aimed to introduce second and third year students to the new media within museum exhibition environments. The program was delivered to students of a hybrid design and technology program, Information Environments, at UQ and within an Architecture and Interior Design program at UniSA.

The learning outcomes ranged from the ability to document and analyse existing media installations to the development of an inventory of existing conditions and the proposal of a text and visual strategy for the re-design of an existing media system. The program was delivered on and off campus through lectures, field trips, tutorials and presentations to develop analytical skills and group work to contextualize findings. Students were asked to complete a summative evaluation of the field trips and report on their findings. Students worked in groups of three and presented their findings collaboratively. Field trips included the Maritime Museum, Queensland Museum, Science Museum in Brisbane; and the South Australian Museum, Migration
Museum and Holdfast Bay Interpretive Centre in South Australia. The students chosen for this study were assumed to have a basic knowledge of media systems and their context.

**Findings from the University of Queensland**

*Context* proved to be the most difficult notion to deliver and, consequently, the learning experiences most difficult to construct. The second year students ranged in age from 18–30. While it was not evident at the beginning of the study, the lack of rigour regarding their academic scholarship resulted in students being unable to distinguish between entertainment and education in exhibition settings. When asked directly and taken through an example in the Science Centre, students responded that they preferred the entertainment-based exhibits because they were ‘more fun’. For the most part, the separation of education from an entertainment-based exhibit was beyond their analytical skills. In terms of media, students had trouble distinguishing the difference between private and public space in the establishment of interactive forms of exhibition. Their relationship to content at a potential level of development (the notion of a virtual curator) (Beardon and Worden, 1997) was not possible.

The text of the museum covered within lectures included notions of narrative, metaphor, rhetoric and social space. It was assumed that students had some general understanding of these notions as the study of new media demands a peculiar cross section of interdisciplinary knowledge. As was reported through discussions with colleagues after the pilot study, the students had not been exposed to these concepts throughout their studies. They struggled to understand the relevance of these notions in their predominately technical education. This resulted in a lack of critical judgement, evidenced through the perfunctory answers to the summative evaluation, the lack of understanding of a new media or museum discourse and an inability to analyse and synthesise material at the site or in the studio.

*Social practices.* Few of the students visited museums in their social time. A proportion had visited some form of museum during high school but very few had returned. The idea that a museum is a social space seemed foreign to the students. The students in this study had undertaken all of their university learning within the university grounds at Ipswich. They were unfamiliar with field trips and had no practice at data collection. This resulted in cursory data collection at the site, illustrating a lack of understanding of the analytical and documentation skills required in the field. This was clearly communicated through problems with understanding the summative evaluation form and the questions it raised. The problem was compounded by students’ lack of representational and communication skills – the students conceived and produced most of their work on computer: working on paper in a built environment proved extremely challenging for some students.

In terms of the shifts which Young and Lucas identified in the move from insular to connective knowledge, the pilot study could be summarised as follows:

| From subject knowledge to curriculum knowledge | The groups education proved to be too skills-oriented (computer skills) with specialist information in areas of programming unrelated to the key skills of information collection and documentation in the field. |
From teacher-centred to learner-centred pedagogic knowledge

Assumptions of students’ analytical, conceptual and manual skills were made on the basis of educational documentation provided by the university and informal discussion with lecturers within the program. In this case, assumptions that students would be able to analyse, document, record, discuss and present, did not match the requirement of the study.

From intra-professional to inter-professional knowledge

Attempting to relate intra-professional knowledge associated with technology education to a social context proved extremely difficult as the level of translation between the two types of knowledge was still in its infancy and had not been described explicitly to the students.

From classroom to organisational knowledge

Students had a good understanding of working with teams, evidenced through participation, presentations and informal discussion. Students lacked sufficient knowledge to enable links between local, government and community partners; were unable to distinguish between an institution run by volunteers and a government institution in terms of content, context and exhibition effectiveness.

From insular to connective knowledge

In the setting used for this study, the shift from insular to connective knowledge was too difficult to emulate. Students did not have enough background in the area and with such a short time frame, were not able to deal with their learning as an activity beyond the transmitted knowledge provided by the university.

| Table 1: Findings from the University of Queensland, 2001 |
| Context. Students in this group were more easily able to describe the relationships between education and entertainment, making comment on the translation of information for differing environments. Participants discussed the differences between institutions and were able to discuss some aspects of curatorial vision. |
| Text. Students were more easily able to understand the concepts of narrative, metaphor, rhetoric and social space as these formed part of their visual literacy. Students were more sophisticated in their reading of these concepts, producing itineraries and reports which were often based on the Venturi and Scott Brown methodology for categorising, documenting and presenting spatial constructions. |
| Social practices. Students in this study were familiar with the field trip as a medium for data collection, thus came prepared with necessary materials: sketch pads, notebooks, cameras, videos and produced comprehensive documentation at the sites. |

From subject knowledge to curriculum knowledge

Students were able to synthesise subject knowledge in design and develop knowledge in the field of museum and exhibition design through the development of analytical and documentation skills in the field and development of that knowledge through the itinerary produced.
From teacher-centred to learner-centred pedagogic knowledge
The participants were more self directed, were at ease with the notion of managing their learning and expected less in terms of transmission of vocational knowledge.

From intra-professional to inter-professional knowledge
Most participants had specialist knowledge in their profession. The translation to an inter-professional medium was realised quite readily, in particular for those students who were eager to explore conceptual understandings of narrative in space.

From classroom to organisational knowledge
Students had a good understanding of working with teams, evidenced through participation, presentations and informal discussion. Students had sufficient knowledge to enable links and some expressed a desire to continue developing skills in this area.

From insular to connective knowledge
Students were able to embrace the narrative aspects of exhibition design, providing a focus on the development of three dimensional spaces which was beyond a formalist form follows function agenda.

Table 2: Findings from the University of South Australia, 2001

In general, students in this study had a better understanding of the context, text and social practices of the museum environment. They were able to work in a self-directed fashion and produced design work based in a commonly understood and practiced method of representation.

Research Study Three: Lecture at Flinders University, South Australia

Studies One and Two suggested that the notion of narrative, while understood by design students, was less understood by interdisciplinary information technology/design students. When preparing a lecture on the subject for Archaeology students, interdisciplinary knowledge was used to determine the approach. The lecture was delivered to final year students of the Archaeology program at Flinders University, South Australia. The lecture introduced students to the various performances of display, using a generic approach to the material rather than a specifically technological or visual dialogue.

The lecture proposed that in order to come to terms with exhibition development and technological development, one could consider various performances of display. In doing so, students could be introduced to some of the key notions of context, including institution and audience, private and public space, power and knowledge, visitor experience and expectations. The lecture was structured around the developing exhibitionary taxonomy, introducing students to notions of metonymic, immersive, virtual and mnemonic display. The lecture included a short description of the exhibition process and production techniques. This process was used by students in the development of exhibitions and was later translated into professional workshops for the History Trust of South Australia.
Research Study Four: Professional workshops for the History Trust of South Australia

The process of exhibition development was extended and developed into a workshop for the History Trust of South Australia. The workshop was delivered to 15 regional and rural museums in South Australia, over a full day, usually within the regional museum setting. The outcome of the workshop was a display plan for each museum to use toward the production of a display in conjunction with the Federation Project, funded by the Veterans Affairs Department. The exhibitions aimed to raise the profile of particular communities in relation to their returned servicemen. Participants were usually volunteers from the community with a passion for the particular objects or stories which were part of their community.

The workshop aimed to provide participants with a process for planning exhibitions using new media technologies. The learning outcomes ranged from clarifying the intention of the exhibition to identifying key themes, specific objects and information, developing an itinerary of spaces, and the production of a plan which documented the process of production.

**Context.** Participants in this workshop often had an in-depth knowledge of the material. Unlike undergraduate students, the collection was a clear focus in their understanding of exhibition planning. Their roles as custodians were well established within the community as was their control of the relationships between visitors and the collection. The major challenge with this group was the move away from a functionalist, transmission approach to exhibition development.

**Text.** As custodians of the collection, the participants enjoyed status within their community which was often played out through their performances at the display site. The notion of preparing exhibitions which were less dependant on individual curatorial performance was overcome by considering the text of the exhibition. By focusing on the vision of the project—the approach, limitations and benefits to visitors—the process could embed documentation which was beyond the particular interests of the curator. For instance, when asked, ‘Why is the project worth doing?’ and ‘Why would visitors value this exhibition?’ curators had to consider the benefit of the exhibition from a visitor rather than custodian perspective.

**Social practices.** In all instances, the volunteer curators were willing to use a defined process to establish an approach, design and implementation schedule for the exhibitions. Working with the volunteers to clarify the project established the context for considering the methodology which was specifically focussed around the experiences which would be generated by the exhibition. Using the exhibitionary taxonomy as a guide, participants could consider the narratives, objects and technologies within the context of a social setting.

<table>
<thead>
<tr>
<th>From subject knowledge to curriculum knowledge</th>
<th>Participants were encouraged to consider that in order for their specific subject knowledge to be understood by others, they would need to place it within the context of the community or other experiences which were broader than the original subject.</th>
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<tr>
<td>From teacher-centred to</td>
<td>Participants were encouraged to develop exhibitions which relied less on</td>
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learner-centred pedagogic knowledge | their performative role as curator and presented information in such a way as to allow the visitor to engage in the information in their own time and at their own pace.

From intra-professional to inter-professional knowledge | Specialist detailed knowledge was clearly evident in the participant understanding of the collection. The workshop encouraged participants to develop exhibitions which supported visitor learning and enabled visitors to add their experiences in some way.

From classroom to organisational knowledge | This process was encouraged through proposing links between existing and future partners, through the development of narratives which broadened the appeal and scope of the collection to enable a wider audience to engage with the information.

From insular to connective knowledge | Participants were reminded that the collections and stories integral to their institutions could only be accessed by outsiders by fostering a learning experience within and beyond the institution.

| Table 3: Findings from professional workshops, 2001. |

The workshop served to identify key issues of curatorial engagement with exhibition processes. In particular, it identified the changing role of curator and visitor, the changing text of power and knowledge and changing social practices in designing for increasingly diverse visitor expectations.

In 2002, the evaluation of the pilot studies, along with the experiences of the workshop, were synthesised into two new forms. The first was the development of a semester-long undergraduate course in the Information Environments program at UQ. This course addressed the findings of Study One and identified key concepts, skills and methods required to enable the understanding of the museum environment at an undergraduate level. The second development was a proposal for a new media mapping tool which would variously synthesise the workshop and teaching experiences into a professional model of educational material.

**Research Study Five: University of Queensland**

A core unit was delivered to first year students of the Information Environments program at the University of Queensland. The unit was delivered over 13 weeks, one full day per week in Semester 2, 2002. The course aimed to introduce students to the knowledge, concepts, methodologies and skills for the development of information environment projects. The learning outcomes ranged from the ability to identify key concepts to describing characteristics of site, analysing design principles in relation to information architecture and applying those principles to the development of projects.

The unit was structured around ten one-hour lectures introducing students to the concepts of space, digital environments, information, navigation and hierarchies, and methods for analysing and visualizing information. The course was delivered on and offcampus through lectures, field trips, tutorials and presentations to develop analytical skills and group work to contextualize findings. Students were asked to complete a summative evaluation of the field trips and report on their findings.
Students worked independently in the first eight weeks of the semester and in groups of three in the last five weeks culminating in a collaborative final presentation. Two field trips were included: Global Arts Link, Ipswich and the Ipswich Rail Museum. Students were asked to evaluate two museum websites using the evaluation template provided.

**Context.** Research Study One had been undertaken with second year students of this program one year before. That study identified issues including inability to analyse a given site; lack of cogent language for analysis; lack of method for documentation, representation and presentation and lack of understanding of context of theory within an interdisciplinary practice. Study Five attempted to address these issues by introducing students to visual literacies through an understanding of design principles; introducing a systematic evaluation for analysis and critique of the site; introducing concepts of narrative, pattern work and hypertext; applying this knowledge through a given analytical method and producing a project which addressed the conceptual and spatial context of new media environments.

**Text.** In order to simplify the language of the museum, the study was developed using the term information environment to encompass the physical and virtual museum sites. The method of teaching and the basis for a transmission approach to education and its outcomes in educational settings was described to students. This ensured that students understood, at a fundamental level, the difference between a transmission approach and a constructivist approach to education. Thus armed, examples of changes in power/knowledge could be discussed in a positive way. Students undertook research into design principles to provide a text which they could use to describe their findings. This research was carried out in an independent fashion with students providing complex and thoughtful responses to the project.

**Social practices.** As first year students, these participants had little in the way of expectations of what a university education might be. This malleability was of benefit as students engaged in field trips without questioning the relevance of the trip. Students were encouraged to work in groups to complete the summative evaluation which had been developed from the original used in Study One. Back in the studio, students continued to work together to analyse and critique museum websites with the intention of strengthening social practices of visitation and of encouraging the visual and contextual link between physical and virtual museum spaces.

| From subject knowledge to curriculum knowledge | First year students come with a variety of experiences which can be utilised in constructing bridges between existing and new knowledge. This course identified specific skills and methods which would enable the transition from subject to curriculum knowledge. |
| From teacher-centred to learner-centred pedagogic knowledge | Students were able to focus their activities on the project work and independent research due to the explicit description of skills required and the broader context of those skills delivered through lectures, group collaboration, presentation and field trips. |
| From intra-professional to inter-professional knowledge | Students were supported in their access to expertise (library and group workshop modules were built into the course). |
From classroom to organisational knowledge

As first year students there was little which could be undertaken in this area. The experience of off-campus analysis went some way to broadening student understanding of the context of knowledge.

From insular to connective knowledge

Students gained a solid introductory understanding of the museum, experiencing it as an institution outside of educational obligation. Students engaged in the differences and similarities between the physical and virtual sites in a positive way.

Table 4: Findings from Study Five at the University of Queensland, 2002.

Conclusion

Ball describes the key features and learning processes for students who are attempting to connect university learning with organisational expectations. She suggests that students require business awareness, self-management, communication, networking skills, teamwork, research, problem-solving, self-presentation skills (Ball, 2002, p.18). While these recommendations were made after the final study had taken place, it is encouraging to consider that the action research model used in these studies ultimately made reference to most of these characteristics.

The process of developing undergraduate courses in tandem with professional programs proved a valuable method for analysing the knowledge, skills, concepts and methods which contribute to the field. Most specifically, it identified the need for understanding the museums as an institution, understanding exhibition as a communicative medium, developing tools for describing exhibition within the development process, translating functionalist to social constructivist pedagogies in the experience of exhibition, understanding the implications of new media technologies on design development, and recognizing changing roles and responsibilities of the museum practitioner.

At the same time the studies highlighted the broader educational issues within interdisciplinary new media education which include the changes to the notion of university as a higher education institution, the power/knowledge relationship of expert and novice as traditionally found in design education and modelled through studio practice, the deterritorialisation of content material across a number of disciplines, the dematerialisation of experience spaces, and the abstraction of pedagogy and epistemologies.

In particular, the studies defined the areas of concern in new media education which must be addressed to move from insular to connective knowledge. These included defining the new media descriptors which encompass the field, engaging in discourse of interdisciplinarity from a trans-disciplinary framework, recognising the role of context in further education and establishing new patterns of engagement for coursework and research. To these, Ball has added the need to develop self evaluation for students, the ability to articulate a rationale for engaging in personal and professional development, the need to build on student experiences and the need to
develop opportunities to rehearse personal and professional developments and opportunities to reflect on learning (Ball, 2002, p.19).

While these studies were undertaken within more traditional educational environments, that is, a school of architecture and design and a school of information technology, their relevance to the creative industries is illustrated in the outcomes described herein. How these characteristics of new media education, interdisciplinary practice and connective knowledge might evolve over the next decade will prove a fertile ground for new models of expertise in design education.

Footnotes

[1] CADE is an International community of Computers in Art and Design Education. It runs a conference every two years and contributes to the Springer publication, *Digital Creativity*.

ACUADS is the Australian Community of University Art and Design Schools. It runs a conference each year to explore the issues which face art and design educators.


References


