Journal of University Teaching & Learning Practice

Volume 5 | Issue 1 Article 7

2008

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Recommended Citation
Ellmers, G.; Foley, M.; and Bennett, S., Graphic Design Education: A Revised Assessment Approach to Encourage Deep Learning, *Journal of University Teaching & Learning Practice*, 5(1), 2008.
Available at:http://ro.uow.edu.au/jutlp/vol5/iss1/7

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This journal article is available in Journal of University Teaching & Learning Practice: http://ro.uow.edu.au/jutlp/vol5/iss1/7

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Graphic Design Education: A revised assessment approach to encourage deep learning

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Abstract

In this paper we outline the review and iterative refinement of assessment procedures in a final year graphic design subject at the University of Wollongong. Our aim is to represent the main issues in assessing graphic design work, and informed by the literature, particularly 'notions of creativity' (Cowdroy & de Graaff, 2005), to develop and incorporate assessment procedures that allow creative ability to be assessed with greater transparency and objectivity. In the first iteration we developed a structure to standardise and clarify the existing model for the subject. Once this structure was in place we identified issues that would benefit from a review of the literature on assessment in the creative disciplines and the broader field of pedagogy.

We marked the shift from surface approaches to learning to deep approaches to learning (Moon, 1999) at the point where we identified gaps in the learning outcomes. Our response was to move the focus from the outcome to the process and to introduce a staged assessment procedure with a stronger emphasis on formalised reflection, cycling throughout the design process. We divided the learning process into two streams: thinking and making as a means to clarify facets of learning.

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Introduction

Most programs in design education are based on principals of studio-based and project-based learning (Davies & Reid, 2000). These approaches traditionally typically engage learners in increasingly more complex design projects as they advance through the course, guided by feedback from teachers and other students. The final project product or artefact is typically used as the primary measure of learning, thus focusing students on the outcomes of the project rather than they process by which that outcome is achieved. Critics argue that this de-emphasises the design *process* and as a result marginalises the important learning opportunities it presents (Kvan, 2001; Ehmann, 2004).

To address this limitation, educators in the Graphic Design program at the University of Wollongong have developed a revised approach to teaching and learning that integrates critical reflection, informed by the work of Schön (1987). 'Notions of creativity' (Cowdroy & de Graaff, 2005) were employed to structure our approach, leading to an increased emphasis on the design process. This is articulated in two streams – *thinking* and *making*. Design *thinking* occurs throughout the design process, from idea generation and formation (via prototyping) through to completion and review. Design *making* is the physical, iterative formation of the final design artefact.

The integration of this revised approach, in turn, led to a re-evaluation of existing assessment practices and highlighted key issues of particular relevance to design education. These include the challenge of assessing creative ability in a more explicit manner, and the need for strategies to improve transparency and objectivity within the assessment process. This paper details developments to date in what is an ongoing process of review and enhancement of assessment as an integral part of improvements to the overall teaching and learning approach. In particular, we focus on a shift from an approach that encourages surface learning towards one that encourages deep approaches to learning (Moon, 1999) and one which aligns assessment with learning objectives (Boud, 1990).

Analysis of Previous Assessment Strategies

In addition to accrediting appropriately qualified graduates that meet the needs of employers and responding to current political and system imperatives, assessment in higher education must have 'educative value'. In other words, assessment should be part of and feed into the learning process, and not simply be a quantifiable measure of it.

The critical role of assessment in the learning process is well documented (Ehmann, 2004; Gibbs & Simpson, 2004; Drew & Shreeve, 2005) and there is a growing body of evidence highlighting the relationship between assessment and learning. Boud (1990) argues that because students focus on what is assessed, assessment drives student learning. Thus, learning objectives must align with assessment tasks to direct student learning (Boud, 1990; Rust, 2002), and the assessment process

should be ongoing and aligned to goals of subject, course, discipline, profession and higher education (Raison & Pelliccione, 2006).

An initial analysis of the existing assessment in the University of Wollongong Graphic Design program was framed using the concepts of deep and surface approaches to learning (Marton & Saljo, 1984; Moon, 1999). Whilst a deep approach is associated with a student's intention to make sense of the tasks in hand, a surface approach is associated with a focus on the 'signs' of learning, often with the intention of memorising them in order for them to be used at a later date. Deep approaches to learning occurs when students seek to understand ideas for themselves, as opposed to surface approaches to learning, which is motivated by an intention to cope with course requirements. Moon (1999), drawing on the work of Entwistle (1996), outlines the following characteristics of deep and surface approaches to learning (see Table 1).

Table 1: Characteristics for deep and surface approaches (adapted from Moon, 1999, p. 122)

Surface approaches to learning	Deep approaches to learning
• Studying without reflecting on either purpose or strategy • Treating the course as unrelated bits of knowledge • Memorising facts and procedures routinely • Finding difficulty in making sense of new ideas presented • Feeling undue pressure and worry about work	• Relating ideas to previous knowledge and experience • Looking for patterns and underlying principles • Checking evidence and relating it to conclusions • Examining logic and argument cautiously and critically • Becoming actively interested in course content

In this initial analysis we considered how the assessment criteria might be linked to particular student behaviours, which we had identified through observation and student evaluation. We then considered how these related to characteristics of deep or surface approaches to learning. Through this process we were able to identify how the existing assessment encouraged students to adopt a surface approach. The results of this analysis are summarised in Table 2.

Table 2: Assessment criteria alignment to surface approaches to learning descriptors

Existing assessment criteria (prior to revision)	**Typical student behaviour**	**Surface approaches to learning characteristics (Moon, 1999)**
Demonstrated ability to initiate a self-set project that is relevant to the student's own career intentions	Without an explicit and informed connection being made between the project and career intentions, the student relies on assumptions based on employment outcomes and proposes design ideas that are outcome-based, rather than process-based. Assessment is limited to technical and stylistic considerations.	Finding difficulty in making sense of new ideas presented; feeling undue pressure and worry about work
Demonstrated ability to conduct appropriate visual and text research to support their project	The student makes assumptions about the value of research and more likely to limit the scope of research and direct their attention towards stylistic considerations instead of developing knowledge about design process.	Memorising facts and procedures routinely

Existing assessment criteria (prior to revision)	**Typical student behaviour**	**Surface approaches to learning characteristics (Moon, 1999)**
Demonstrated ability to articulate ideas and to maintain an ongoing reflection on the work in progress	Without explicit teaching of reflective practice strategies, the student tends to dismiss articulation and reflection as 'academic' pursuits and fails to transfer knowledge from one project situation to another.	Studying without reflecting on either purpose or strategy
Demonstrated ability to negotiate a design idea through to completion	The student begins at the end point, that is, the final outcome is moved forwards without consideration of the process involved in testing and substantiating the idea. This often results in work that cannot be defended against the criteria.	Treating the course as unrelated bits of knowledge

Key Influences in the revised approach

Two key considerations influenced the revision of the assessment practices: enhanced feedback, and authentic assessment.

Enhanced feedback

Ongoing feedback is important (Boud, 2000; Taylor & McCormack, 2004; Ehmann, 2005) and can be in oral, video or asynchronous forms (Taylor & McCormack, 2004; McCormack & Taylor, 2006). Feedback can also be public, private, group or one-to-one, planned or impromptu (Ehmann, 2005). Ehmann (2005) found that ongoing feedback was useful to support understanding of assessment criteria and that this had the potential to modify the teaching and learning activity.

Assessment is an instrument of educative value and not merely a quality control mechanism. Boud describes the notion of sustainable assessment, which encompasses the "knowledge, skills and predispositions required to underpin lifelong learning activities" (2000, p151). Boud suggests that the inclusion of high quality formative assessment practices supports lifelong learning practice and that "formative assessment guides us in how to learn, what we wish to learn, and it tells us how well we are doing in progress to get there" (Boud, 2000, p155)

Formative assessment can facilitate learning by actively engaging the student in the learning process. This can also support development of the students' awareness, and ability to articulate with greater clarity what they have learnt, supporting greater effectiveness with industry engagement.

> "Formative assessment can provide a vehicle through which students can develop their capacity [to] make claims to their employability, supporting these with an appropriate distillation of the qualitative and quantitative (i.e., grade-based) evidence that they have collated during their time in higher education. This may provide a richer depiction of graduates' qualities and achievements than numerical grading systems" (Yorke, 2005, p. 234).

Ehmann describes formative assessment processes with graphic design students involving the development of response maps, peer-assessment, and written responses that support the student to construct meaning in their project.

Complicating the feedback interaction, whatever the context, is the nature of the design being critiqued:

> "Often the work has never been viewed before. It is as a developmental stage, rather than a finished product. This situation is challenging both for the students and the teacher. The teacher has to give feedback that is encouraging and motivating, that may contain negative elements, often without adequate time for reflection and preparation of a response prior to the feedback interaction" (Taylor & McCormack, 2004, p. 3).

An important development in the revised teaching approach is making improved use of formative assessment opportunities in the teaching and learning process. While the previous teaching model included both summative and formative assessment, the new model integrates formative assessment with the subject curriculum to a greater extent. The revised approach actively engages the students with their feedback by asking them to respond to the feedback between the various project stages. This occurs through informal individual discussions, formal class discussions and presentations, and in the written process and reflective report (see below).

In the new model teaching staff provide feedback, including student peer review, at the following points:

- The initial seminars in which students present their proposal - this offers an opportunity to receive formative and critical feedback from staff and peers. Where possible external reviewers are invited to participate to broaden the response to the proposal.

- The interim design presentation during which the student is asked to respond to feedback given in the initial seminar - further feedback is given on how well the student has incorporated the comments into the design and developed his/her response. This stage also includes a review of the design work-in-progress and provides formative feedback on the *making* aspect of the work.

- The final presentation of the work is made to the whole class - at this stage, feedback is provided by staff, industry representatives (where possible), and student peers. The students are able to respond to this feedback during the presentation, with a further opportunity to respond in a more considered manner in the following reflective report.

- The reflective report in which the student, responding to a series of leading questions, reviews the project outcomes and puts forward his/her own evaluation of the project - in this report the student reflects on how the project met the objectives and how they might approach subsequent projects in the future. Both formative and summative feedback are provided to assist the process of knowledge transfer from this project to future work, providing a sound basis for the student to develop their design practice and life-long learning skills.

Authentic assessment

Authentic assessment has also been identified as an effective assessment approach in the creative arts and design education (Taylor & McCormack, 2004; Axelsson, Eriksson & Widestrom, 2006; Raison & Pelliccione, 2006). Authentic assessment can be more than offering students real world problems and challenges. It can involve students in the client and provider relationships of the respective profession (Axelsson et al, 2006). In order for deep approaches to learning to occur, students have to see that what they are engaged in is actually connected to the real world. Therefore, it is essential for tertiary institutions to provide learning experiences and authentic assessments that are relevant. Authentic assessment should be educative, explicit, relevant, valid and comprehensive (Raison and Pelliccione, 2006).

A question of interest for design educators in today's quality-focused context is, as Taylor and McCormack suggest, "how to ensure this authentic assessment practice is effective in meeting the needs of the student, the teacher, the university and the profession" (2004, p. 1). Authentic assessment is promoted within our approach by establishing connections between the student's own project proposal and real world expectations, such as being able to demonstrate initiative, industry knowledge and issues of professional practice. This is enhanced by the inclusion of external reviewers during the process, who offer a more direct professional perspective on the student's work. A requirement in the student proposal stage is to identify resources and skills required to achieve the desired outcome. Specific skills-based learning programs, such as technical workshops, can then be developed to support student project aims.

The Revised Approach to Assessment

In addition to the influences described above, our revisions to the teaching and learning approach in the Graphic Design program were largely based on distinguishing the *thinking* and *making* aspects of the design process (Cowdroy & de Graaff, 2005). The aim was to shift the emphasis from the design *product* to the design *process*.

To encourage design *thinking* students are required to;

- articulate their initial proposal in a seminar
- document their response to the feedback from the seminar
- complete an interim presentation of the design under development
- present the final design artefact
- articulate the design process and reflect on the design and learning outcomes.

These points throughout the process are bought together in the process report that students submit along with the final design artefact. This has close parallels with the approach articulated by Ehmann (2004) where students are asked to communicate and evaluate (with supporting visuals) critical stages

in their research, exploration and development of their project in the form of a 'research and development summary' document. In addition, our approach requires the student to write a final reflective report, responding to targeted questions, one week after the design artefact has been submitted. This timing is intended to allow students to 'distance' themselves from the completion stage. The aim is to establish an environment in which the students review their overall achievements, distanced from the emotion and energy surrounding the final design artefact presentation and submission.

Design *making* is the physical formation of the design artefact. It is represented in each stage of the project initially in the visualisation of the idea in the early formative design stages, for example, moodboards, storyboards or design roughs. As the project progresses, *making* then transforms into the physical prototype of the proposed design artefact. The final *making* stage is the completed design artefact.

This approach encourages students to see both *thinking* and *making* aspects of the project as a way to establish their own ongoing learning practice. This, as Cowdroy and de Graaff (2005) point out, allows the creative project to be assessed more objectively based on explicit criteria that are stated at the outset of the project. Students are aware therefore that they will be part of an ongoing assessment procedure, with each stage reinforcing their learning and thus producing an optimal design outcome. By constructing an explicit framework for thinking, we aim to promote deep approaches to learning. Students are guided through the process of developing a self-set brief (initial proposal) and are coached in developing 'deep approaches to learning' outcomes throughout the process.

Within the context of this revised teaching and learning approach, staged assessment procedures were modified and developed to align with the learning objectives (as suggested by Boud, 1990). The revised assessment criteria, what the students are required to do, and how this aligns with characteristics of deep learning are positioned within the design *thinking* and *making* model and summarised in Table 3.

Table 3: Assessment criteria alignment to characteristics of deep approaches to learning

Assessment criteria	Requirements of students	Deep approaches to learning characteristics (Moon, 1999)
DESIGN THINKING		
Demonstrated ability to form a self-set project that is relevant to the student's own career intentions	Students are asked to examine their own capabilities and intentions and then to locate these in a relevant industry sector (eg, publications design, web design). This drives self-reflection as well as research into the industry sector, and opens potential career pathways.	Checking evidence and relating it to conclusions
Ability to conduct appropriate visual and text research to support their project	When establishing the case for the project, students are required to substantiate their positions, claims about their own abilities, and the relevance of their proposal to the sector with which they identify. Visual and other research (patterns and principles) are used to support their claims.	Looking for patterns and underlying principles

Assessment criteria	Requirements of students	Deep approaches to learning characteristics (Moon, 1999)
Ability to articulate their ideas and to maintain an ongoing reflection on the work in progress	The three presentation points (initial, interim and final) connect students with their proposal, and in general work to increase student ownership of the project idea. This promotes student-centred learning to achieve a competitive outcome.	Becoming actively interested in course content
Ability to perform as a reflective practitioner, establishing a platform for knowledge transfer including speculating on how the new knowledge might be applied in future design situations	Self-set projects draw on the student's knowledge and expertise developed during their undergraduate program. The notion of the Reflective Practitioner (Schön 1987) is introduced including how reflective strategies integrate into the cyclical nature of the design process.	Relating ideas to previous knowledge and experience Looking for patterns and underlying principles
Ability to negotiate a design idea through to completion	Students are required to make a valid case for their proposal based in their research and development. This distinguishes the project from a 'hobby' outcome, which would simply satisfy a desire to work unconstrained. Argument and negotiation are crucial to the student being able to defend their proposal. In addition students are required to explicitly respond to feedback from the panel and peers. For example the interim submission requires students to identify and respond to feedback from the initial presentation. This might result in refinement of the initial proposal, or a new proposal which is constructed to answer the issues raised.	Examining logic and argument cautiously and critically
DESIGN MAKING		
The visualisation of a design idea or concept	Advanced visualisation requires a similar level of criticality to written or verbal argument.	Examining logic and argument cautiously and critically
	Student uses visual skills, such as identifying patterns and relationships; making sense of complex information; as well as knowledge of design principles to move the project from concept through to prototype (testing and argument) to completion (conclusion).	Looking for patterns and underlying principles
The transformation from idea to prototype, in particular the ability of the student to understand the purpose of the prototype stage as a testing phase for their proposed design artefact	Student is required to justify all aspects of their proposal to meet their stated aim (outcome). This includes choice of medium, typography, imagery and design approach. Student is asked to defend their decisions and to state how they assist the transformation from concept to conclusion.	Checking evidence and relating it to conclusions

In the revised approach, students experience the whole design process, from problem setting, generating ideas, prototyping proposed solutions, listening to feedback and drawing on their expertise to realise a final design artefact, and producing a transitionary reflection on the process that they have been engaged in. While it could be argued that the students experienced the whole design process in the previous approach, what has changed is that the design process is much more visible. That is, rather than it being implicit, the design process is now more explicit in the teaching and learning approach. In addition, the students are exposed to the same process being experienced by their

peers and therefore see the complexity of the process from within (their own project) and by looking on (other student projects being developed concurrently).

Given the variety of ideas developing in the class, teaching staff are able to draw attention to the way that the creative process contains underlying design principles and experiences, but can have substantially different outcomes. Despite the fact that each student response appears different, students are encouraged to identify the principles that underlie their design project (concept, proposal, argument, negotiation, testing and resolution for example). Building on this perspective it can be demonstrated to students that both the creative process and the design artefact are represented in the assessment process.

Outcomes and Conclusions

Our initial analysis using the concepts of deep and surface approaches to learning laid the groundwork for re-development of our program, and allowed us to identify gaps in the learning process that needed to be addressed. In revising the program we have responded to a number of these gaps by:

- using the creative process as a site for assessment to balance the prior emphasis on the design artefact, and thereby encouraging deeper approaches to learning; and
- staging the assessment progressively throughout the course of the subject to introduce reflection points, allowing students to identify key incidents in which to respond and to make explicit the relationship between stated learning outcomes and the assessment criteria used to drive these outcomes.

By establishing a distinction between design *thinking* and *making* we have been able to direct the student attention to deeper levels of knowledge within each stream, and so expose previously indistinct aspects of the design process. Then, as the student projects develop teaching staff can demonstrate how these two streams come together into an integrated and reflective practice.

Further enhancement of the approach will: seek to make the criteria for assessment clear at the outset of the project; develop a rubric for assessment that clearly articulates the relative weightings and enhances feedback to the student; and more closely examine the relationship between the design project report and the reflective report. Currently, via formalised research leading to a PhD, Ellmers is developing measures of cognition to evaluate design thinking. Once fully tested we plan to use this research to further investigate the shift towards deep approaches to learning that this model supports.

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