Characterising Creativity: a holistic methodology for the assessment of creative works

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Abstract

This paper reports on the early stages of a design experiment in educational assessment that challenges the dichotomous legacy evident in many assessment activities. Combining social networking technologies with the sociology of education the paper proposes that assessment activities are best understood as a negotiable field of exchange. In this design experiment students, peers and experts engage in explicit, "front-end" assessment (Wyatt-Smith, 2008) to translate holistic judgments into institutional, and potentiality economic capital without adhering to long lists of pre-set criteria. This approach invites participants to use social networking technologies to judge creative works using scatter graphs, keywords and tag clouds. In doing so assessors will refine their evaluative expertise and negotiate the characteristics of creative works from which criteria will emerge (Sadler, 2008). The real-time advantages of web-based technologies will aggregate, externalise and democratise this transparent method of assessment for most, if not all, creative works that can be represented in a digital format.

Introduction

This paper discusses technology based educational assessments of creative works[1] in three sectors; Certified Vocational Training, Higher Education and Creative Industries from a socio-cultural perspective. The paper argues that each sector's assessment protocols are disjointed and ambiguous, which leads creative students to confusion at best and disillusion at worst. Setting universal criteria to assess creative works across disciplines is not possible, but identifying and characterising culturally and historically relevant creativity is a valid option. Strategic semantic analysis of social practices embedded in web 2.0 technologies will assist these sectors characterise and exchange evaluations of creativity as a logical, democratic and transparent progression of assessment methods. The paper outlines the research team's view that a combination of semantic analysis (Gruber, 2008) with social networking practices within an exchange framework has wide ranging applications for the assessment of many creative works.

Background

At present Creative Industry evaluations rely primarily on experts' notions of excellence in creativity. Feedback about the quality of creative works exists within all sectors mentioned above but it is often misleading and misplaced (Pollit, 2004, Stobart, 2008). According to Stobart (2008) common versions of feedback such as "praise and marking", which focus on the individual not the task are evident in all education sectors and they rarely move learning forward or add value to the student's educational experience. Educational institutions encourage regular feedback that typically informs the student's final grade, yet evidence from a real creative industry commission (presented below) allows for criteria to emerge through the feedback process.

The criteria we use to assess creative works overlap in practice because their boundaries are situationally dependent (Sadler, 2008). This study builds on this premise and the creativity research of Kimbell's (2008) UK trials to develop a computerised methodology based on a holistic judgment approach (Sadler, 1987, 2008 a,b) that allows for such overlap and for new criteria to emerge during the assessment process.

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[1] For the purpose of this article "creative works" refer to any product and/or performance that a student or professional submits in response to an assessment task or client brief.

The paper's research question derives from an Australian Research Council funded project that will provide educators with an alternative assessment model for at-risk students, without an *apriori* focus on student deficit. The initial research question; what is the optimal model for assessing the intellectual, social and aesthetic resources that at-risk youth bring to (and develop through) flexible learning environments? required our team to investigate the relationship between pre-set, emerging and social networking criteria. Our research team's evaluation of this relationship has wide ranging implications for all post primary learners that will contribute knowledge, practices and processes to the assessment of creative works as it opens up to public scrutiny many of the misguided ways creativity has traditionally been assessed.

Method

The project is a design experiment (Design-Based Research Collective, 2003) in educational assessment. This research and development model, developed at Vanderbilt, Washington and UC Berkeley, has been used extensively in small to medium scale curriculum innovation in US schools (e.g., Cobb et al. 2003). It combines a rigorous approach to data collected on the effects of the model, with an interventionist approach to program development through action research. The intervention - in this case an assessment model - is continually reviewed and revised in light of new empirical evidence of its effects, intended and unintended. The method is underpinned by socio-cultural theory or a situated view of learning and assessment (Murphy & Hall, 2008). All participants are invited to be assessors and are subsequently positioned as experts within a community of practice (Lave & Wenger, 1991), where learning occurs through integrated social, physical and cognitive experiences at an interpersonal level. The pilot assessment model, visually similar to popular social networking websites, invites students to upload and evaluate creative works that document particular aspects of their learning. The model facilitates *assessment as exchange* so that students, educators and industry experts translate their creative digital artefacts into symbolic (grades, certificate, reports) and economic (potential) capital.

Central to the proposed model is shared terminology for all sectors based on two important features of assessment practices; a focus on the *exchange (or conversion) of various forms of capital* (Albright & Luke, 2007) and the significance of *emergent criteria* (Sadler, 2008 *a,b*) in the evaluation of creative works. The model aims to characterise creative works in a relevant, relative and systematic manner, thus enabling incremental student achievements to realise academic and commercial value. Adapting the rating, keyword and tag systems used in social networking websites will provide those in education and industry with transparent and democratic tools. These tools will enable the negotiation of context specific benchmarks, as well as providing verbal descriptors and aggregated numeric data of the standards that will emerge as their interpretation is circumscribed through repeated use in context. Crucially, this model will afford participants with an insight into assessment purposes and procedures with the aim of reducing appeals against the decisions of educators or industry agents.

Many of the seemingly arbitrary scoring systems in education do not offer clear justifications and ways forward (Stobart, 2008). The most sophisticated creativity scoring system, which our research team is currently aware of, is located in Kimbell's (2008) E-scape trails. Based on Thurstone's (1927) law of comparative judgment Kimbell (2008) and Pollit (2004) have designed a real-time "pairs engine" that reports (0.95) holistic judgment reliability. The "pairs engine" is an automated ranking system that presents assessors with pairs of creative works and asks them to scrutinise each holistically to decipher which one represents greater capability. At the outset the engine assumes all works are equal and through frequent holistic paired judgments a rank order emerges with high inter judge reliability. Our model incorporates this approach to holistic judgment to challenge notions of inherent ability, student deficit and the league table standardisation of creativity, which will move the Creative Industries (and the education providers who feed it) beyond simplistic scoring systems to formally characterise creative capacity.

The learning outcomes of the proposed model ensure that students, educators and industry experts understand the situational dependence of criteria and use this knowledge to set relevant benchmarks, whilst avoiding their reliance on either/or assessment matrices. Judgments about creative works will always require some form pre-set criteria in formal education settings. Yet our team's review of assessment protocols (summarised below) highlights how Creative Industry judgments in the real world allow for criteria to emerge after an initial brief, whilst Certified Training and Higher Education sectors do not.

Review of Assessment Protocols

Despite the institutional and ideological differences between Certified Training, Higher Education and Creative Industries they share a common goal in contemporary western societies. They all aim to produce high quality creative works that can be exchanged for economic capital. This does not mean every time someone responds to a creative brief they think in terms of economic value (see O'Connor, 2004, p. 39 on *creative mavericks*). It does mean that we can find explicit references to shared creative goals through each sector's public communications. Based on data gathered from each sector in Australia and compared with UK counterparts, three hypothetical scenarios illustrate this overlap.

Scenario A:

In Australia Vocational and Educational Training (VET) packages require trainees to acquire competency based industry currency, yet few trainees secure full-time employment based solely on these credentials (Ninan, 2004). The dichotomous national assessment terminology for VET is *competent, partially competent* or *not yet competent.* A unit called *Generate high-end PDF files* (see ntis.gov.au) requires an explicit assessment of a trainee's technical skills whilst making implicit references to their creative capacity. The official method of assessment for this unit offers the following advice, suggesting that assessors use "direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate. Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended" (NTIS, 2009).

In this scenario a trainee might submit a creative PDF format CD or DVD cover for this unit. Creative thought would be required to engage the technical elements of this unit, yet there is no mention of creative process in the unit outline. As all criteria refer to technical details VET trainers are forced to assume that the reference to "holistic assessment" should cover all creative aspects of the candidate's submission. A literal reading of this unit outline suggests that the creativity demonstrated within the PDF is not an assessable element. Performance criteria are explicit and preset, yet they are not updated regularly to reflect industry changes (see Music Industry package CUS01 at ntis.gov.au, last revised 10-10-2005). This scenario suggests that a competent trainee might possess technical proficiency and therefore gain full certification whilst having little understanding of whether or not their work was creative.

Scenario B:

Higher Education encourages students to reflect upon their creative works "in progress" and like the VET system, criteria are usually preset and not negotiable. Similarly most Higher Education institutions, in this case Queensland University of Technology's (QUT) Creative Industries Faculty, offer specialist units (in this case CI Projects) designed to offer students "real-world" experiences of working as part of a project team (QUT, 2009)

Assessment tasks for this unit are divided into 10% project proposal (core), 80% project tasks (set by supervisor, which must be broken down into smaller units) and 10 % Evaluation (core). The 80% task assessments have to meet QUT's policy guidelines and must be presented to students before the project begins. QUT provides a wealth of information and policy related advice about these assessments quoting key texts such as *Assessment Design* (Brown, 1994, p. 12.) and the use of *Criterion-Referenced Assessment* (CRA). This system is rigorous, reflecting the level of Higher Education, and is specifically designed to meet the published graduate requirements for a degree course.

Scenario B assumes the trainee from Scenario A completed his/her Certified Training and has used this symbolic capital (Bourdieu, 1980, 1986) to enrol in a Bachelor of Creative Industries at QUT. In this scenario the Higher Education provider issues the student with a set of explicit preset criteria about creative team projects. As QUT guidelines encourage as many assessment types as possible, there are ample opportunities here for self, peer and expert assessments to inform the 80% project tasks. However, there are implicit assumptions made in this context. As there is no reference to creativity in the pre-set criteria students must assume that because their faculty, degree and this unit has the word "creative" in its title, it must be part of the course in its entirety.

The actual terms "creative or creativity" are missing from most CRA in the same way they are within the VET framework. As far as the assessments are concerned, creativity is implicit and not something students are taught to consider formally. The hypothetical student in scenario B would be required to meet core elements in the traditional

written format, leaving the project supervisor to attend to any assessments of creativity. This outcome may appear reasonable, but considering that students and supervisors have different subjective opinions about what the term means and how it is demonstrable, this is a potentially confusing situation. Left to the supervisor's interpretation, rather than being systematically addressed as part of core business, a student could develop a unrealistic understanding of what creativity means in relation to commerce. Consequently that student would be left to their own devices to comprehend the myriad of ways valid responses can achieve the same standard (Sadler, 2008 *b*).

Scenario C:

Industry agencies that commission creative works expect and allow for revised versions (or drafts) of the contractor's work before they sign off and issue payment. Scenario C uses an example from a real musical composition brief for a multi-media website. To ensure a valid frame of reference for this scenario the research team discussed the notion of competitive tenders and industry briefs with an experienced and respected freelance sound designer in Brisbane (Willsteed, 2009). This sound designer stated that the word creativity is not referred to in any of the industry briefs he has been invited to compose. Willsteed (2009) confirmed that there is no standard tender process or pro-forma, but there are a number of common elements. He provided an example of a typical commission, which comprised of a series of emails and two formal letters.

Project Description: Composition of original music, for use in the (name of the project) web-based game.
5 pieces of music are required:
1. *Opening theme – 40 seconds duration*
2. *Mobile phone ringtone – up to 5 seconds duration*
3. *(Name of the project) sting – up to 3 seconds duration*
4. *Holding or loading music – up to 30 seconds duration (with the ability to be looped)*
5. *Public event music – up to three minutes duration*

The target audience for (name of project) is school students, aged 10-14.

Deliverables: The five music pieces described above will be delivered as mixed, finished versions, as AIFF files. Specifications: 16 bit, stereo, and 48,000 hz.

Delivery Schedule:
1st drafts :January 19
Feedback from 1st drafts : January 21
2nd drafts : January 27
Feedback from 2nd drafts : January 29
3rd drafts (if required): February 2
Approval of 3rd drafts: February 4

Mixed, final versions : February 9

First, the word "original" encapsulates a similar meaning to "creative" but it has distinctive and purposeful copyright connotations in this context. Second, the delivery schedule allows for two drafts with feedback before final submission, which equates to 13 days between 1st draft and final versions. Willstead (2009) managed to compose four of the five original pieces with only two revisions (see the 5th of 6 client emails below; confirmation from the website production manager)

Hi John
Thanks so much for your efforts with the music

We are signing off on:
- Opening theme
-loading loops (both versions)
-ringtone
-event music

Could you provide another version of (name of the project) sting? Jules (the director) likes the current sting, but John and David (who are designing the site) are unsure that it will work in the virtual space they have created. Could you provide another version that is shorter (2-3 secs duration) and more discordant/jarring/darker? Then we'll pick between the two.

First, only one "loading loop" was requested in the initial brief but through the feedback process the client has accepted two versions. Second, the final sentence above highlights the importance of emergent criteria. *Discordant, jarring, darker* and the reduced duration (2-3 secs) of the sting are criteria that emerged after the sound designer had responded to the initial brief. This statement demonstrates a real world Creative Industries version of assessment. There is no mention of the terms creativity, peer/expert review or criteria, although all these elements exist within this commission.

The major distinction is the way each sector provides feedback before final submission. In scenario A an assessor is officially only interested in feedback related to the trainee's technical competency. In scenario B a lecturer would provide student feedback related to criterion-referenced assessment in which the word creativity may or (more likely) may not figure. In Scenario C feedback about the sting was in dispute so the sound designer was given additional criteria and asked to provide another version upon which clients could make a final team decision. This type of feedback would not usually occur in either the Certified Training or Higher Education sectors, but it should be part of their commitment to preparing students for creative employment opportunities.

These distinctive modes of assessment share a common denominator that centres on high quality creativity. Certified Training, Higher Education and Creative Industries all strive towards the production of commercially viable creative works, yet assessment tasks do not spell this shared agenda out to the trainees, students and early career graduates. Our research teams's design experiment will devise a process that can accommodate relative standards and benchmarks and allow for emergent criteria that will satisfy the distinct requirements of each sector. The theories that inform this process and the *assessment as exchange* method must "front end" assessment agendas (Wyatt-Smith, 2008), provide a common language and satisfy reporting policies to which education providers must adhere, without falling into the trap of reifying creativity as something we can view under a microscope and subsequently codify.

Crucial elements of the design experiment

Based on this review of assessment protocols and preliminary data analyses from the target learner cohort our research team has commissioned a content management system (CMS) to house an online assessment model for a network of flexible learning centres. The prototype will "intervene" at the first school site for 12 months to enable the description and ranking of student's educational achievements in both conventional academic and non-traditional courses of study. Although this project is concerned with a specific school-aged cohort the model has transferable qualities that make it suitable for wider application with all post- primary learners in the proposed exchange method of assessment.

The content management system will act as a web-based e-portfolio that has both internal (private assessments interactions between student and educator) and public (showcase of creative works) features to make it unique in field of educational assessment. A democratic and transparent assessment method needs to offer students and their educators numerous ways to offer constructive feedback. Harnessing the popularity of the social networking format, which logs all comments and ratings, the new model will invite students and educators to negotiate their ongoing education assessments. The model will act as test case for holistic and reliable creativity assessments described by Kimbell (2008). Ultimately the research team would like all students to use this model and become aware of their intellectual property, its potential value and subsequently exchange their cultural and social capital reserves for institutional, symbolic and economic capital (Bourdieu, 1980, 1986). The theory of assessment process that informs the proposed methodology cannot be fully explicated here. However, there are certain elements of our design experiment the research team considers crucial. They are listed below:

Bourdieu's concept of "Capitals"

These act as verbal descriptors, displayed as aggregated visual and numeric representations that students, teachers and industry experts use to inform their exchange of creative works for other forms of capital. This exchange framework is crucial to the design of our method. Following from Grenfell (1996), Albright & Luke, (2007) we believe good assessment in schools, training centres and universities should be able to translate student achievement into "institutional capital" that has a greater exchange value than most of their social and cultural resources.

Ratings, Keywords & Tag Clouds

Ratings, keywords and tags are currently used as crude genre-based coding systems in social networking and multi-media players to categorise and allow for fast searches of content. The popular rating systems, usually 5 Star rankings, are easily open to abuse and for the task at hand they are simplistic and unproductive. The notion, however, of collating several rating combinations (self, peer and expert) of preset and emergent criteria has several benefits, especially if we can harness the reliability of Kimbell's "pairs engine". Our prototype model plans to combine existing rating system practises with an automated ranking algorithm to offer students and assessors greater levels of complexity and transparency.

Similarly keywords are gaining credibility as source of research data that combines qualitative and quantitative elements, especially when represented through tag clouds (Marti, 2008, also see detextive.net, edgex.org.au, 60sox.org.au for practical research based applications). These semantic visualisations act as a marker of social interaction with digital content, which functions as a suggestive device rather than a precise depiction of the underlying phenomenon (Marti, 2008 p.8). As our model encourages assessors to appraise creative works using a sophisticated rating system, a large bank of capital descriptors and tags (or keywords) will emerge that will contribute rich aggregated data for each student submission. This will increase relevant assessment vocabulary, contribute to a shared assessment language for all sectors and help to build what Sadler (2008*b*) calls a bank of latent criteria.

X-Y Dartboard Gadget

Our research team is also exploring a scatter graph scoring system based on the theory of fuzzy logic (Ragin, 2000). There have been numerous applications of fuzzy logic to the assessment of various disciplines (Hwang, 2009), but none have focused upon products emanating from Creative Industries students. Research findings from engineering, portfolio assessment, writing and English language courses suggest there are benefits in applying fuzzy logic to statistical assessments that require self, peer and expert judgments (Nguyen, 2006).

Rather than asking judges to score creative works against a series of discreet criteria an X-Y scatter graph design would allow assessors to feel their way - like a connoisseur would - to approximate a series of scores based upon holistic judgments. Fuzzy logic would perform the background mathematical work required to compile scores into spreadsheet data and inform rankings. The graphic user interface of this gadget would resemble a dartboard that allows users to read and write preset and emergent criteria. We plan to adapt this gadget to Kimbell's (2008) "pairs engine" to produce real-time ranking, but also envisage a "resubmit/update" function for uploaded content that invites *all* participants to be assessors. This process will allow all assessors (student, teachers and industry experts) to view the ways different creative works can achieve the same, or similar, exchange value through instantly updated displays. The gadget must allow for easily editable criteria and be available across-platforms for mobile devices. It also enables all assessments to serve formative assessment purposes so that works are amenable to amendments before they are exchanged for institutional capital in the form of reports, grades and/or certificates/qualifications.

Cyclical design

For relevant benchmarks and a bank latent criteria to emerge through rating, keywords and tag clouds this assessment model has to be cyclical. This aspect of the method responds to research findings reported in relation to students' use of school-based social networks. Without a mandatory requirement Tan (2009) found that social networking was not something students choose to do within a school context. They preferred to use the websites that they can use outside of school. This choice reminds us of Becker's (1977) sociological findings that depicted the way medical students learned to disregard any aspect of their course that was not formally assessed. Building on this

knowledge our research team has agreed to create a new online assessment system as long as our industry partners (in this case a network of flexi-schools) commits to the cyclical design of the new system. This agreement ensures student use of the new assessment system is a mandatory requirement, not a choice. We envisage many students engaging with the social networking and exchange features of the new system outside of school hours, but we are not naive enough to assume that all will be willing participants. Our team is working through the culturally appropriate processes to ensure that all students feel that this system is something with which they want to engage. To document developmental progress this mandatory review procedure ensures that every student works through the process of *assessment as exchang*e at least every six months.

Going public

The public face of this model displays symbolic artefacts that students and staff have successfully translated into institutional capital. Similar to academic peer reviews this procedure is negotiated between students and staff in line with the principles of assessment for learning (Black & Harrison, 2004, Klenowski, 2002, Marshall, 2006). To ensure the web portal is secure, we only grant staff the administrative rights to create groups and publish artefacts to the World Wide Web.

Procedure for Going Public: Assessment as Exchange
1. Student sends request to staff to convert their uploaded content to public view (content must have at least one tag, one rating and one capital descriptor from peer, self and expert)
2. After reviewing peer, self and expert assessments of the content, the staff member responds with one of two options (1. inappropriate for public - must revise and resubmit or 2. appropriate for public viewing and further public scrutiny)
3. If inappropriate - staff must provide reasons and possible changes
4. If appropriate – staff confirms the request and converts the content to public view

This procedure will be refined over the course of our design experiment. But the basic concept will remain in tact - to facilitate student's ability to exchange their combined resources for institutional capital.

Discussion

This paper presented assessment scenarios that make implicit references to creativity in Certified Training, Higher Education and Creative Industries. The paper demonstrates that the common denominator between these sectors is an aim to translate creative outputs into institutional and/or economic capital. Despite obvious criticisms that this terminology reduces all facets of social life to a form of economic determinism there are current and potential benefits in encouraging people to use web tools to acquire, store, save and exchange various forms of capital. Sadler (2008*b*) warns that this "credit accumulation economy in education" is a barrier to learning. Our research team views this use of the term capital as an informed response to an inevitable structural constraint.

At this early stage of our investigation into the relationship between pre-set, emerging and social networking criteria, our data suggests that exchange based assessment activities have the potential to avoid over-analytic attempts to standardise the judgment of creative works. The proposed model is efficient, explicit, democratic and transparent. The goal of devising a real-time web-based exchange portal that aggregates self, peer and expert assessments of creative works in a systematic manner has appeal for all stakeholders. This model challenges the either/or dualism evident in many assessment procedures and disputes the common misconception that variation and diversity are interchangeable terms, by publicly displaying contrasting student responses to assessment tasks. The model adapts social networking practices to display the sum total of judgments about creative works so students can see for themselves which works have achieved the required standards. The most distinctive feature of this assessment model is that it affords assessors and industry experts the ability to present students and clients with a creative brief that has some pre-conceived standards, but also allows criteria to emerge throughout the various stages of feedback through tag clouds, ratings and scatter graphs.

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