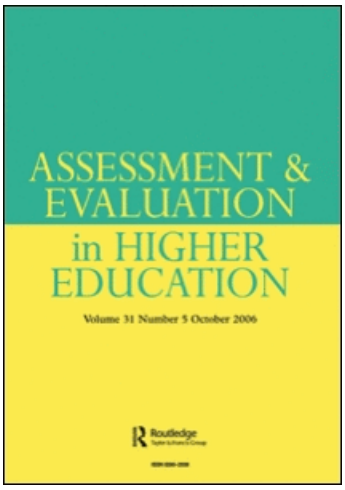
This article was downloaded by: *[Brown University]*
On: *12 November 2008*
Access details: *Access Details: [subscription number 784168974]*
Publisher *Routledge*
Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Assessment & Evaluation in Higher Education
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713402663

Assessing highly-creative ability

Rob Cowdroy [a]; Erik de Graaff [b]
[a] University of Newcastle, Australia [b] Delff University of Technology, The Netherlands

Online Publication Date: 01 October 2005

To cite this Article Cowdroy, Rob and de Graaff, Erik(2005)'Assessing highly-creative ability',Assessment & Evaluation in Higher Education,30:5,507 — 518
To link to this Article: DOI: 10.1080/02602930500187113
URL: http://dx.doi.org/10.1080/02602930500187113

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: http://www.informaworld.com/terms-and-conditions-of-access.pdf

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Assessment & Evaluation in Higher Education
Vol. 30, No. 5, October 2005, pp. 507–518

Routledge
Taylor & Francis Group

Assessing highly-creative ability[1]

Rob Cowdroy[a]* Erik de Graaff[b]
[a]*University of Newcastle, Australia*; [b]*Delff University of Technology, The Netherlands*

Downloaded By: [Brown University] At: 13:34 12 November 2008

This paper presents a psychological perspective of the educational dilemma of assessing highly (high-level) creative ability (with some connections to contemporary philosophical debate). Assessment of highly-creative ability is a topic of longstanding debate involving questions of what constitutes creativity; whether the creative mental process is essentially intuitive or essentially rational; whether creative ability could or should be reduced to quantifiable parameters; and whether the most important aspects of creative achievement reside in the initial thinking (invention of ideas) or in the subsequent process of development of the idea (making a work of art, design, etc) or in the end product (the work of art or design itself). The debate is fueled by various philosophical, psychological and educational perspectives, all of which are continuously evolving. As a consequence, learning objectives and assessment criteria are ambiguous and confound the enhancement of creative ability that is the primary purpose of higher education. This paper traces the research and development path that led to an innovative 'authenticative assessment' approach to assessing highly-creative ability that offers a promising solution.

Introduction

Assessment of creativity has been a longstanding problem, particularly at the higher levels of creativity, across the whole spectrum of school, vocational and higher education around the world, and the authors' research has contributed directly to this debate as it applied to issues of cross accreditation in higher education in the European Union, and to both vocational and higher education in Australia. This research has both a 'psychological' perspective including fundamental research into 'unconscious' thinking with special reference to inspiration as a special form of creativity, and an educational perspective in development of applications of this basic research to practical teaching and assessment approaches in the creative arts and design professions. It was debate on *creativity as research* that offered a possible solution to the problem of critical evaluation of highly creative ability in its practice (practitioner) context, with a flow-on solution to problems of teaching and assessing high levels of creativity in higher education.

*SABE University of Newcastle, NSW 2308, Australia. Email: arrmc@alinga.newcastle.edu.au

ISSN 0260-2938 (print)/ISSN 1469-297X (online)/05/050507–12
© 2005 Taylor & Francis
DOI: 10.1080/02602930500187113

Much of the discussion about creativity gets bogged down in debate about origins, use and abuse of the word 'creativity' but this is irrelevant to a topic that crosses multiple languages and cultures. The setting of the present paper is what we *understand by the idea* of creativity, as distinct from what we mean by the word 'creativity'.

What do we understand by the idea of creativity?

The *idea* of creativity embraces a multiplicity of notions, including imagined (conceptual) *ideas*, development of *schemata* (constructs, analogies, diagrams, etc) emanating from the ideas, physical *execution* of ideas (the activity of making, performing, etc), and created *products* resulting from the ideas (works of art, manuscripts, performances, etc) (Cowdroy, 1997; Brophy, 1998). Distinctions between various creative arts fields (disciplines) generally derive from the end-point of the creative process (a painting, a design, a composition, a script for a play). In many cases a creative field (music composition, play-writing, etc) is coupled with one or more other creative fields (performance, etc) to form a third or encompassing art form (music, theatre, etc).

There are many taxonomies of creativity in the literature, generally originating in philosophy and psychology (Bergquist, 1999) and, while they disagree in detail, there is broad agreement on a hierarchical arrangement of types of creativity according to the contribution of 'imaginative' cerebral activity, with *conceptualization* at a high level, *development of schemata* (derived from a concept) at an intermediate level, and *physical execution* (derived from the schemata) at a lower level. Other recognized notions of creativity include (at one extreme) hallucinations, dreams and 'visions', which are particular forms of (imagined) ideas and—at the other extreme—instinctive actions such as engaging a stick as a weapon. These extreme versions of creativity, however, are of little relevance in the present educational context, and are therefore excluded from present discussion. Various notions of inspiration abound (including 'divine' inspiration) but are generally associated with spontaneity and singularity, and for present discussion, inspiration is considered to be spontaneous conceptualization, and therefore included in discussion of conceptualization.

We can relate the taxonomies of creativity to contemporary philosophical debate about the nature of thinking by (*cautiously*!) referring to Deleuze and Guattari's (1987, 1994) discourses on the nature of thought in which 'a concept' is described as an indivisible singular *thought* that encapsulates all aspects of a proposition (approximates what in Kantian philosophy is called 'schema'). Such a Deleuzian concept can be 'actualized' by realization of the proposition (for instance, as a developed hypothesis or theory). This line of philosophical debate, however, does not directly address the physical process of execution, nor the created product, only thoughts about them, so Deleuze and Guattari's 'concept', when 'actualized', is still in the mind, and therefore compares reasonably closely with the idea of *schematization* in the taxonomies of creativity and in the language of creativity (but not to be confused with Kantian 'schema').

Downloaded By: [Brown University] At: 13:34 12 November 2008

The taxonomies generally ignore the made object (for example, the work of art), implying that creativity is generally understood to be a creative *process*, not an end product, and with a higher 'creativity ranking' given to the imaginative processes of conceptualization and schematization than to the 'craft' of execution. Of course, this construction inevitably inflames artists, sculptors, musicians and actors who consider it to undervalue both their execution skills and the products of their creative ability. However, most could be persuaded to accept that their execution skills are more 'craft'-oriented than imaginative, and are 'downstream' of their imaginative mental processes, which reflects the general arrangement of the taxonomies.

For present purposes, therefore, the idea of creativity is taken to embrace just three forms: (in hierarchical order) *conceptualization*, *schematization* and *execution* (after Davidson, 1996; Bergquist, 1999).

Downloaded By: [Brown University] At: 13:34 12 November 2008

The question of assessing creative ability

Assessment of creativity in the practice domain typically takes the form of critical evaluation, and is inevitably qualitative rather than quantitative. In higher education, creativity is generally accorded 'higher order' ability status, and assessment typically imitates that in the practice arena, but is focused on both the end product (that has been created) and on the 'crafting skills' associated with the execution stage of the creative process, and only token recognition is given to the 'higher-order' abilities of conceptualization and schematization. Moreover, greater weight is given to final assessment of the work which is submitted for examination and less to the crafting skills which are assessed progressively *en route*. That even the 'lower order' skills are devalued in the assessment process.

A persistent problem in assessing highly-creative ability of practitioners is the reluctance of practitioners (artists, writers, composers, etc) to hypothesize about the outcome of their work before completion of the work, and then only on a defensive basis open to what in psychology is referred to as cognitive dissonance (unconscious modification of memory, or 'remembering what one wants to remember'). Creative practitioners prefer to 'let the work speak for itself' and to be judged by others. However, a work can rarely speak adequately of its creative origins in the mind of the creative artist, composer, or designer. If, therefore, the originating concept (or a subsequent substituting concept) is not revealed, then *the essential criteria for evaluation of creative ability is not revealed,* the focus of assessment (critical evaluation) is forced onto the end-product (the painting, the performance), rather than the creative process behind the product (the concept, the schemata). Consequently the product must be critically evaluated and assessed according to criteria arbitrarily adopted by the critics and assessor(s).

This brings us to the crux of the problem of assessing creative ability, and particularly highly creative ability in both the practice and higher education domains: given a work to assess, what is there to indicate that there was any creativity beyond the crafting? That is, what is there to indicate that there was any creative imagination involved? We may be able to judge that a work is innovative,

even unique, but was it a fortunate aberration or was it the outcome of genuine creative imagination? And, if the latter, was it highly creative or exceptionally creative?

Another persistent problem in critical evaluation of creativity in the practice domain is the claim that highly creative work evolves from free improvisation, and that artists, composers and designers must be free to improvise at will. This raises several questions: first, is there an originating concept and do the improvisations develop from the originating concept? If so, then the improvisations may be considered as alternative schemata derived from the originating concept, the originating concept is maintained as the essential foundation of the work *and of the creative ability that leads to the work*, and the work is therefore genuinely the outcome of high-level creativity (conceptualization). Secondly (alternatively) does the improvisation depart from the originating concept? If so, then the originating concept is no longer the foundation for the work and *is not part of the creative ability* associated with the work, and the work *cannot be established as the outcome of high-level creativity*. This latter case may indicate that a new concept has replaced the original, *or* that the improvisation reflects a *search for a schema*, in which case there is no identifiable originating concept, and therefore no highest level of creativity.

Deleuze and Guattari present a notion of a 'rhyzomatic' (variable, non-linear) concept that 'takes flight' and changes according to its 'neighbourhood' (approximates immediate context) and 'plane of immanence' (approximates field of relevance). This notion of rhyzomatic concept is claimed by some in practice and educational fields to justify creative artists' right to free improvisation as the source of high-level creativity. Deleuze and Guattari's discourses, however, are about the nature of *thought* itself, while in the creative arts the focus is on *the work* (not merely thoughts about it), and in this respect, the notion of a creative concept refers to a thought or idea that is directly (linearly) related to a particular work or performance ('This is *the* concept on which *this* piece of my work is based'). That is, in the creative arts, the originating concept itself does not vary (consistent with Deleuze and Guattari's 'singularity' of concepts), but *schemata* (not to be confused with Kantian 'schemata') are developed (in various contexts) from an originating concept (comparable with Deleuzian 'actualized concepts' as previously discussed). These schemata represent direct creative paths from the concept, through its ('actualized') schemata, to its realization as a work or performance; there may be many alternative paths considered, but each is essentially linear (and therefore not rhyzomatic), only one will eventually lead to the work, and all paths stem from a single, invariable concept.

In the practice domain, some measure of the underlying creative path may be arbitrarily inferred from critical evaluation of the work, but *the originating creative ability is not directly addressed* and therefore the work cannot be established as highly creative. In the educational domain, assessment is intended to measure creative ability as a learning outcome, but is at best focused on execution at the level of lowest creative value and, at worst, on the work itself which may or may not be an outcome of *creative ability*.

Downloaded By: [Brown University] At: 13:34 12 November 2008

Pressures for conformity with conventions of assessment in other fields of education, and reinforced by global quality assurance demands for objectivity, uniform standards and transparency reinforce focus of assessment on the demonstrable execution and the tangible product and preclude assessment of *creative ability* (Harman & Meeks, 2000; Cowdroy *et al*., 2002).

Creative ability, in both the practice and educational contexts, is therefore at best inferred, but is not assessed.

So, why don't we assess creative ability?

Reluctance to theorize about a work *in advance* is an entrenched cultural condition across most of the fine arts and many of the performing arts, and its legacy in the educational arena takes various forms, which generally fall into four main traditions: one tradition claims that creative ability is a 'gift' (shades of *divine inspiration*) that should not be interfered with or demeaned or profaned by teaching or assessment, although individual *nurturing* of 'gifted' students by exposure to a master (who has 'the gift') is accepted; another claims that creativity is innate and cannot be taught (you've either got it or you haven't) but, again, can be *nurtured* in small groups by exposure to masters; a third (for instance, the Bauhaus approach) claims that creativity can be taught in larger groups, but only by long and direct association with *living masters* (such as studio apprenticeships); and a fourth (for instance, the Beaux Artes approach) claims that creativity can be taught *en masse* but only by reproducing the work of *past masters* (for example, of antiquities, classics and icons) under the guidance of tutors.

Of these four main traditions, the 'gift' tradition is fundamentally opposed to formal education and depends, instead, on a partnership based on mutual respect; the 'innate' tradition is oriented towards 'followship' and is closely related to the traditional apprenticeship model of vocational education; the 'studio apprenticeship' tradition is oriented towards 'passing on' the abilities and values of the master and is comparable with cognitive apprenticeship models in higher education; and the 'reproduction' tradition is heavily oriented towards the *craft* of art rather than intellectual originality, and closer to competency-based teaching models in vocational education. These traditions (as presented here) conform broadly to the hierarchical order of the taxonomies of creativity, with the *gift* tradition focused on schematization, the *innate* and *master–apprentice* traditions oriented towards schematization and execution, and the *reproduction* tradition focused on execution. *None of these traditions is focused on imaginative conceptualization*.

Formal education in the creative arts around the world is generally a hybridized combination of *master–apprentice* and *reproduction* approaches in varying proportions, with history, theory and practical training added. That is, formal education in the creative arts is oriented to the schematization and execution phases of the creative process, but bypasses the highest level of creative ability (conceptualization).

But conceptualization is of the essence of creativity; and if this is neither taught nor assessed, then it must be accepted that creative ability as a whole is neither taught nor assessed.

Downloaded By: [Brown University] At: 13:34 12 November 2008

So how do we move forward?

Teaching in formal education is effectively dominated by assessment: what we teach is that which will be assessed. While this is not a necessary condition, in practical terms it is enforced by various accreditation and quality assurance obligations and by institutional resources all based on *uniform minimum standards*. In the absence of criteria for assessment of conceptualization and schematization, we cannot assess and therefore do not teach these higher levels of creative ability. The absence of criteria also raises doubts about the validity of critical evaluation of works of art and about claims of creative ability in established creative practitioners: on what basis can an artist or composer or writer be deemed to have outstanding creative ability?

The key seems to be in the *criteria* for assessment, but as practitioners are reluctant to reveal the conceptual origins and schematic rationale of their creative intentions, there are no criteria on which their creative abilities can be established. A possible solution to the problem of assessing creative ability comes from the *creativity as research* debate; that is, from the question: *could creativity be research*?

Downloaded By: [Brown University] At: 13:34 12 November 2008

Could creativity be research?

The question of whether creativity could be research arose from pressure for all university teaching staff to undertake research. Heated debate continues about whether creative arts teaching staff (who are typically also practitioners) should be excluded from research obligations (largely based on arguments that 'real' creativity could not be subjected to hypothesis testing) or whether creativity could be considered 'equivalent to research' and therefore eligible for research grants (but on different selection criteria), or whether separate 'creativity grants' systems should be provided (thereby reducing funds for research grants).

The debate has been complicated by questions such as whether writing a book (a central research outcome in the humanities) is a creative activity that should be excluded from research funding but eligible for creativity funding. Another question is whether design by architects and graphic designers is *prima facie* creative but design by engineers and industrial designers is not.

Eventually, the debate led to a perverse proposition that creativity *could* be research, *only if* research could be creativity, and to a new question of *could research be creativity*?

Or, could research be creativity?

Several exemplars of research were adopted for evaluation *as creativity*. Among these was the 'black hole' research of Penfold and Hawking (Hawking, 1993) in the field of theoretical physics. The following outline of that evaluation illustrates the general thrust of several approaches to the question of *research as creativity*.

To cut a long story short, Penfold's idea of black holes in the universe was entirely intuitive: it did not come directly from any conventional process of deduction or

rational analysis; it came to him spontaneously and unexpectedly (he was in a pedestrian refuge waiting for a break in the traffic) and was entirely consistent with the spontaneous conceptualization at the source of many great creative works (vide Mozart's spontaneous conceptualization of his requiem). Penfold's concept presented an important new bridge between the General Theory of Relativity and quantum mechanics. This first stage of the discovery of black holes was therefore both a significant piece of science research and an inspired (spontaneous) concept, and therefore *was creativity* at the highest level in the taxonomies of creativity.

Penfold's (with Hawking's) subsequent schema to prove the existence of black holes (and thereby verify the connection between the General Theory of Relativity and quantum mechanics) by observing bending of light waves was partly intuitive (the intuitive idea of bent light as evidence) and partly a rational theoretical schema for an experimental method of observation. This stage of the discovery of black holes was both a significant piece of research in its own right and entirely consistent with both the schematization stage in the creative process and the intermediate level in the taxonomies of creativity, and therefore *was creativity*.

The ensuing search for bent light was an application of established experimental techniques and procedures that were not necessarily creative in their own right, but formed the final stage in Penfold's overall black holes research project. In this respect, it was at a lowest level of research value and corresponded with the 'craft'-oriented execution phase of the creative process, and therefore *was creativity* in this context, but the question that then arose was whether this research could be *assessed as creativity*.

Downloaded By: [Brown University] At: 13:34 12 November 2008

Can research as creativity be assessed as creativity?

To address this question we must first take a step back. In assessment of *research as research*, evaluation is undertaken on an individual basis and, if we then look at how research is evaluated, we see that it is not what a researcher knows (knowledge) or does (methodological skills, procedure followed) that is evaluated; it is the researcher's explanation of why particular bodies of knowledge (among many) are relevant to a particular issue ('framing' the research question) and why particular methods (among many) are most appropriate to answering the question (Mauffette & Poliquin, 2001). We also see that the researcher must *present* the intended research *in advance*, as a hypothesis, and must *defend* that hypothesis in terms of established theory and philosophy (for example, for assessment for competitive research grants). In this respect, it is axiomatic that conceptualization (for example, Penfold's initial spontaneous concept of something called a black hole) cannot be assessed in advance, but can be assessed *post hoc* by extrapolation from schema developed from the initiating concept, and both the originating concept and the ensuing schema can be the basis of a presentation and defence that can be assessed.

As well as illustrating the researcher's knowledge of details of work in hand, the researcher's *presentation and defence* of proposals at each stage comprehensively illuminate the researcher's knowledge and understanding of the discipline's

philosophical and theoretical frameworks, methods and various contexts (science, society, etc). This evaluation can be applied to the research project itself (for example, for funding) or to the researcher (for example, for appointment, promotion), and either or both can be graded on both a comparative basis (relative to other projects, other researchers) and according to established norms for the discipline (Cowdroy & Mauffette, 1999).

If we now look at Penfold's and Hawking's research *as creativity*, the same *presentation and defence* could be assessed in order to establish the relationship between concept, schema, craft and product. This may represent, to some people, a paradigm shift from research as science to research as philosophy, but if we accept that science and creativity are both fundamentally theoretical (and therefore philosophy) then both forms of creativity can be assessed using the same approach.

Downloaded By: [Brown University] At: 13:34 12 November 2008

So how do we assess creative practitioners?

First, we can consider an expert practitioner to be someone who has had extensive experience (as a practitioner) *and* who has extensive knowledge of the history, theories and current state of the art (and related arts), and of other practitioners in the same field. In this case, the practitioner *could be expected to* be able to articulate the conceptual origin of a work in terms of relevant theories, literature and other current work in the field, and *could be expected to* be able to articulate schemata (developed from the conceptual origin) for realization of the original concept, and the craft implications for its execution (in Deleuze and Guattari's terms, an expert practitioner *could be expected to* be able to articulate the line of 'flight' from concept to 'actualization' of the schematic proposal that will subsequently be manifested in a work).

To test these assumptions, a programme of research into the psychological processes of creativity in eminent creative practitioners (in a range of creative fields including architecture, fashion design, painting, music composition, sculpture and writing) was extended to include a pilot study[2] of their ability to articulate the conceptual origin, theoretical foundation and schematic formulation of three pieces of their work that they themselves valued highly: one unrealized, one currently in process and one recently completed.

The method used was a two-stage cross-cultural interview process (after Triandis and D. Keats) which included some simple memory-enhancement techniques, followed by pathway analysis (after J. Keats), within a cross-validation approach (after Spielberger). The practitioners selected were all recent national or international award winners in their respective fields (and so were independently deemed to be highly creative)(Cowdroy, 1997; Crick & Cowdroy, 1998).

The results of the pilot study indicated that a 'straight-line' intellectual development from concept to schematization and to execution was characteristic of the highest creative achievements; that 'free' improvisation was characteristic of their 'less satisfying' work (and also with creative block); and that all practitioners were able to articulate the conceptual, theoretical and schematic underpinnings of each work, *a priori* and *post hoc* using combinations of gesture, diagram, technical language

and analogy, although few were able to write a coherent summary (perhaps due to lack of development and practice in writing about their work).

Expert practitioners therefore *are able to articulate* the conceptual origins and schematic development of each of their creative works at each stage of the creative process, *post hoc* in the case of conceptualization, and both *a priori* and *post hoc* in the cases of the schematization and execution stages, and their creative ability *can be evaluated* by critics according to criteria defined *by the practitioner* in terms of the originating concept (what they proposed to achieve and then whether they achieved it), and the integrity and consistency of the philosophical and theoretical approach at each stage of the process, as well as in terms of the practitioner's post-hoc presentation and defence of the work.

So how does this contribute to assessment in teaching?

Downloaded By: [Brown University] At: 13:34 12 November 2008

A teacher cannot *directly* assess conceptualization nor schematization (they are cerebral, abstract, invisible), but can assess a *student's understanding* of both the concept and its schemata and their place in the theory, philosophy and literature (of art, music or theatre) (Schooler *et al.*, 1996; Cowdroy, 2000; Ramsden, 2003) as articulated by the student. This approach involves a significant double paradigm-shift, from teacher-derived criteria for examination of a work, to student-derived criteria for assessment of the student's *understanding of his or her own concept* in terms of the philosophical and theoretical frameworks of the relevant field of creativity (Crick & Cowdroy, 1998). This articulation *authenticates* the student's creative activity, and assessment using this present-and-defend approach has therefore been called 'Authenticative Assessment' (not to be confused with *authentic learning*).

If the objective of teaching is to develop creative ability (as a learning outcome), then the teaching strategy (to achieve this objective) becomes encouragement of each student to study other works and the literature about them in the respective field of creativity, understand the relevant theories and philosophies, and then to articulate (authenticate) their originating concepts in terms of those theories and philosophies (Crick & Cowdroy, 1998; Ramsden, 2003). At the subsequent schematization stage, intellectual development of one or more (alternative or sequential) *schemata* (diagrams, sketches, analogies, metaphors, etc) can be articulated *in terms of the student's originating concept* and its underlying theoretical frameworks *and can be assessed* by the teacher in those terms. Finally, at the execution stage, the student can demonstrate further progressive intellectual development from the initiating concept and subsequent schemata, and their theoretical and philosophical frameworks. The completed work can then be assessed in terms of its creative development. Thus, both the intellectual and craft aspects of creative ability can be critically and comprehensively (and progressively) evaluated, and teaching strategies developed accordingly.

Trials of this Authenticative Assessment model (at the time referred to as 'contract assessment') were undertaken by teachers and students in summer

universities in Urbino, Italy in 1995 and in Drama, Greece in 1996 and 1997 (Cowdroy, 2000), in a range of creative activities. These trials showed that significantly greater shared understanding between student and teacher, of the student's creative process at all stages, was achieved, and that this approach was worthy of further development. Some 'professional development' of students was indicated as necessary to enable them to self-analyse and articulate each step of their creative process, and some professional development of teachers was also indicated as necessary to enable the teacher to individually and sympathetically tease from the students the conceptual origins (and therefore the criteria for assessment) of their work.

A full-scale application of this approach was developed and adopted in the Bachelor of Architecture (B.Arch) programme at the University of Newcastle, Australia (Maitland & Cowdroy, 2001), with professional development as indicated above built-in to the curriculum for both students and teachers. Grades are based on evidence (from the student's presentation and defence) of the clarity and consistency of intellectual development of a conceptual idea through schematization and execution to the completed work. Where a clear path of development can be traced back from execution to schematization, then moderate creative ability is indicated; where a clear path can be traced from execution through schematic development to a singular concept, then high level creative ability is indicated. These constructs reflect the outcome of the pilot study of practitioners, and are consistent with the taxonomies of creativity.

This full-scale application has been identified as a key factor in exceptionally high levels of student and teacher satisfaction and with the B.Arch programme consistently achieving the highest level of state and national and international accreditation and recognition.

Downloaded By: [Brown University] At: 13:34 12 November 2008

Conclusion

The problem of assessment of creativity has been identified as *absence of criteria for assessment of high level creative ability*, largely due to a culture of 'letting the work speak for itself', and assumptions that improvisation is highly creative activity. However, 'letting the work speak for itself' was shown to obscure the creative ability that led to the work, and improvisation was shown to be associated with reduced creative ability (including 'creative block'). Empirical studies have shown, however, that highly creative practitioners are able (if reluctant) to articulate the conceptual and schematic underpinnings of their work, both *a priori* and *post hoc*, thereby providing criteria for critical evaluation and assessment of their creative ability as well as of their craft of execution of their created works.

Deleuze and Guattari's notions of 'concept' as a singular thought encompassing the whole of a proposition was found to be comparable with the notion of 'concept' generally accepted in the taxonomies and language of creativity, however Deleuze and Guattari's notions of rhyzomatic concepts were found to be reflected, not in the creative concept at the highest level in creativity, but in the subsequent schemata at a

lower level in creativity. This construction further challenges the status of improvisation as highly creative activity.

The creativity-as-research debate suggested a present-and-defend approach as a possible alternative to conventional assessment of highly creative ability, and subsequent empirical studies and field trials led to an Authenticative Assessment approach whereby critical evaluation and assessment shift their focus from *the work* (which is not itself creative) to the *conceptual and schematic underpinnings* of the work as articulated by the author. In the higher education context, the Authenticative Assessment solution allows progressive assessment of work in progress at all stages in the creative process and allows both teaching and assessment to be refocused onto development of creative ability in students. This approach is entirely consistent with current reflective, student-centred and self-directed movements in education, and with criterion-referenced and normative bases of assessment.

Downloaded By: [Brown University] At: 13:34 12 November 2008

Notes

1. Based on a paper presented at the 2003 Evaluations and Assessment Conference, Adelaide, November, 2003.
2. A significant by-product of the pilot study was the unfolding of a potential method for diagnosis of 'creative block' syndrome. A programme to research and develop a practicable 'unlocking' approach to creative block is currently in progress and approaching completion.

References

Bergquist, C. (1999) *A comparative view of creative theories: psychoanalytic, behaviourist and humanist.* Available online at: www.enterquest.com.trees.comparative.htm (accessed 15 July 2003).

Brophy, K. (1998) *Creativity* (Melbourne, Melbourne University Press).

Cowdroy, R. (1997) Creative design thinking: between myth and measurement, paper presented at the *Australian Design Teaching Association Conference*, Broadbeach, August.

Cowdroy, R. (2000) Contract assessment: self-evaluation and empowerment for excellence, in: P. Michialino & M. Voyatzaki (Eds) *les Cahiers de l'enseignement de l'architecture* (Louvaine-La Neuve, European Association for Architectural Education).

Cowdroy, R. & Mauffette, Y. (1999) Thinking science or science thinking? The challenge for science education, in: J. Conway & A. Williams (Eds) *Themes and variations in PBL* (Newcastle, PROBLARC).

Cowdroy, R., DeGraaff, E. & Mauffette, Y. (2002) Striving for excellence: teaching, learning and scholarship: submission to the Australian Federal Government's review of higher education in Australia (under review).

Crick, M. & Cowdroy, R. (1998) Assessing brilliance, *Research and Development in Higher Education* Vol. 4. (Higher Education Research and Development Society of Australasia, conference proceedings, University of New South Wales, Sydney.

Davidson, J. E. (1996) The suddenness of insight, in: R. Sternberg & J. Davidson (Eds) *The nature of insight* (Bradfield, MIT Press), 125–155.

Deleuze, G. & Guattari, F. (1987) *A thousand plateaus* (Minneapolis, University of Minnesota Press).

Deleuze, G. & Guattari, F. (1994) *What is philosophy* (New York, Columbia University Press).

Harman, G. & Meeks, V. L. (2000) *Repositioning quality assurance and accreditation in higher education* (DETYA, Canberra).

Hawking, S. (1993) *Black holes and baby universes and other essays* (Bantam, London).
Maitland, B. & Cowdroy, R. (2001) Redesigning PBL: resolving the integration problem, in: P. Schwarz, S. Mennin & G. Webb (Eds) *Problem-based learning: case studies, experiences and practice* (Kogan Page, London).
Mauffette, Y. & Poliquin, L. (2001) PBL in science education: a curriculum reform in biology at the University of Quebec in Montreal, *PBL insight,* 4(1), 1–5.
Ramsden, P. (2003) *Learning to teach in higher education* (London, RoutledgeFalmer).
Schooler, J. W., Fallshore, M. & Fiore, S. M. (1996) Epilogue: putting insight into perspective, in: R. Sternberg & J. Davidson (Eds) *The nature of insight* (Bradfield, MIT Press), 125–155.

Downloaded By: [Brown University] At: 13:34 12 November 2008