Assessing creativity as an aspired learning outcome: a four-part model

Michael J Ostwald¹, Hedda Haugen Askland¹ and Anthony Williams¹

¹The University of Newcastle, Callaghan, Australia

ABSTRACT: Creativity is a stated learning outcome of design disciplines and it often forms part of the more general attributes guiding pedagogical activities and curricula. Nonetheless, the question of assessing creativity remains highly contentious and it poses both pedagogical and legal or administrative challenges to architectural educators. Whereas traditional assessment methods and processes have often relied on the assessors’ subjective judgement and tacit understandings of what is creative, the contemporary educational climate calls for enhanced transparency and objectivity through often rigid quality assurance mechanisms. These changes in educational culture place increasing pressure on teaching and assessment processes, with particular challenges facing the assessment of creativity.

This paper presents a four-part model for assessment in design education. The model targets the question of assessing creativity in design and outlines the different stages and the various facets of the assessment process. It also identifies the dominant types of architectural assessment to be tested for pedagogical and quality assurance compliance. Finally, the paper locates, identifies and interrogates the four distinct levels of assessment, relating it to existing research from fields of architectural education, pedagogy and assessment.

Conference theme: Design education
Keywords: Assessment, creativity, design education

INTRODUCTION

Creativity is a complex and ambiguous term, which encapsulates the legacy of a range of historical and theoretical debates (Williams, Ostwald & Askland 2010). It refers to interrelated dimensions associated with people, processes, products and milieus, and is often connected with concepts such as originality, novelty, difference, value, appropriateness and surprise (e.g. Amabile et al. 1996; Elton 2006; Maher 2010; Mayer 1999; Paulus & Nijstad 2003; Rhodes 1961; Stemberg & Lubart 1999). The complexity surrounding the term and the various proposed definitions pose a challenge to design education. As a stated learning outcome of the design disciplines, creativity forms part of the more general attributes that guide pedagogical activities and curricula in architecture schools. Nonetheless, the question of assessing creativity remains controversial and it poses pedagogical, legal and administrative challenges to design educators. Traditionally, assessment in design has relied, at least in part, on assessors’ subjective judgement and tacit understanding of creativity within the disciplinary context. As a result of this, the subjective nature of assessment and the subsequent lack of transparency have been cause of student frustration, ambiguity and stress (Bachman & Bachman 2006; Ostwald & Williams 2008a, 2008b). For many students, the assessment of creativity remains a mystery; something beyond their reach (Davies, Swinburne & Williams 2006).

The subjective, tacit nature of assessment is problematic within the contemporary educational climate, which calls for enhanced transparency and objectivity through often rigid quality assurance mechanisms for assessment. These changes in educational culture, regardless of whether they are reasonable or not, place increasing pressure on teaching and assessment processes, with particular challenges facing the assessment of design creativity. They call for consideration of the concept of creativity as it relates to design education, as well as identification and appropriation of reasonable assessment procedures and protocols. The authors of the present paper have addressed the question of the former in previous publications (Williams, Ostwald & Askland 2010) and will, in this paper, focus on the latter through the presentation of a four-part model for assessment in design education. The multi-level model is proposed as a means for assisting identification of the combinations of elements that support best practice assessment in design education. It targets the question of assessing creativity in design and outlines different stages and the various aspects of the assessment process. The model also identifies the dominant types of architectural assessment to be tested for pedagogical and quality assurance compliance. It reflects the diversity and complexity of the design disciplines, and the holistic and encapsulating nature of the model represents an innovative and original approach to assessment in design education.

The model presented in this paper represents one of the key outcomes of the Australian Learning and Teaching Council (ALTC) funded project Assessing Creativity: Strategies and Tools to Support Teaching and Learning in Architecture and Design. It has been developed through analysis of existing literature on design and architecture.
education, assessment and creativity, and primary data collected through: (a) a large-scale symposium with leading Australian design academics and practitioners; (b) a small qualitative survey with international and national scholars from the fields of design and architecture; (c) semi-structured interviews with staff and focus groups with students at eight Australian universities; and, (d) a forum with a small group of assessment and design education experts. The paper is divided into four sections, each presenting one of the four levels of the model: first, the paper presents the overall structure of the model, represented by a general map of the assessment process; second, it presents a matrix outlining the items for assessment and the modes of assessment; third, it outlines the various assessment tools and enablers that may be part of the assessment and presents a matrix that correlates the tools and enablers with the assessment types; and, fourth, it defines key quality principles and shows their relationship to the enablers and tools. It should be noted that the paper does not propose a framework for policy. Instead it provides an overview of the various, multi-layered facets of the assessment process, which may be used to assist design academics to determine how they may overcome difficulties associated with assessment in a university climate that is increasingly focused on quality assurance as well as objective and transparent assessment.

1. LEVEL ONE: MAP OF ASSESSMENT PROCESS

Assessment serves a range of wider purposes, including accreditation and certification, selection, assuring quality, maintaining standards, description and motivation, and improving learning and teaching (Freeman & Lewis 1998; Rowntree 1987; Schwartz & Webb 2002). Assessment is a process of setting apart ‘appropriate standards and criteria and making judgement about quality’ (Boud 2000: 151). It reflects desired learning outcomes of a given discipline and is intimately linked to a university’s or faculty’s mission and goals (Palomba & Banta 1999: 3). Any assessment task will be placed within a greater context that reflects the vested interests of diverse groups, including policy makers, professional associations, industry groups and communities more generally. These stakeholders will, implicitly or explicitly, foster, regulate or constrain expectations and requirements of graduates. These contextual factors represent one of three key dimensions guiding and framing the assessment process. Together with 'student' and 'assessable outcome', the contextual factors create a web of interconnected actors and stakeholders who indirectly or directly influence the assessment process through their actions, expectations and requirements (Figure 1). The assessor—who is at the centre of the model and who is in charge of conducting or managing the assessment—responds to the specifications set by context, to the student’s engagement with and response to tasks established on the basis of contextual factors, and the subsequent outcomes, signs of learning, skills and knowledge.

![Figure 1: Key segments guiding and framing the assessment process](image)

Figure 2 provides a more detailed outline of the interconnected nature of the assessment process. This map represents the first level of the proposed model, providing a general overview of the assessment process. It clearly identifies how assessment does not occur in isolation but serves multiple purposes and illustrates how assessment is part of an ongoing process of negotiation and dialogue between various stakeholders and actors. It identifies the same four key dimensions as Figure 1 (though it distinguishes formative from summative assessment), which more specifically refer to:

- **context** – factors that relate to the disciplinary and higher education milieu that shape expectations regarding students’ learning, students’ approach to an assessment task, and the assessment process itself. Context sets the student’s learning goals, learning activities and learning environment, and guides a student’s approach to a given task;
- **student** – the main agent and stakeholder who provides the work that is assessed and is the recipient of feedback. Though the student’s personality traits will not be directly assessed, her/his abilities—cognitive, processual, material and technical—will be indirectly assessed through her/his management of the project, the process she/he endures, and the product that she/he submits. Personality traits and motivation will influence the learning process as self-perception, expectations and accounts of academic success and failure will have bearing on their performance (Berliner 1996; Brown, Bull & Pendlebury 1997). Motivation and personality traits will be reflected in the assessment process through the submitted outcomes, openness to and reflection on feedback and final assessment;
- **assessable outcomes** – any item put forward for review at any stage of the design process. Assessable outcomes may include representational media (like drawings and models), compilations of text and images (like portfolios or diaries) or verbal presentations (viva voce);
• **formative assessment** – assessment practices that aid learning and focuses the learner’s attention on the process of assessment. Formative assessment will be employed during the life of a project for the purpose of providing information that can be used to shape, modify and improve a project;

• **summative assessment** – assessment practice typically conducted at the conclusion of a particular assessment task or stage to make judgement about the quality or worth of a student’s work compared to set performance standards. There may be multiple summative assessments during the course of a project.

The map illustrates how the overall assessment process adopts a dialogical and, at times, circular quality: context drives student learning and sets the agenda for assessment; the student interprets contextually defined assessment tasks through their production of assessment items; the assessment items are evaluated and given feedback in line with pre-defined requirements; and, assessment items, in circumstances where they challenge or question pre-defined requirements, may lead to consideration of contextually determined attributes, skills and requirements. There is an ongoing process of transformation and negotiation, whereby the quality of any assessment task is considered in light of the feedback provided to and from students and the reflection resulting from the process.

![Figure 2: Map of assessment process](image)

The overall, general map of the four dimensions and their interaction suggests a way of understanding the various stages of the assessment process. It illustrates the many factors that should be considered when designing curriculum, planning assessment tasks and choosing methods for assessment. Moreover, it illustrates the importance of the particular design disciplines to acknowledge the greater context of which it is part, as well as strategic and systematic alignment of assessment tasks and assessment types with the curriculum, course aims, program objectives, intended learning outcomes, teaching and learning activities and more general graduate attributes. The map does, however, not give any indication as to questions related to the design of assessment procedures and processes. It does not tell us whether or not an assessment task is worthwhile; if it develops students’ judgement and lead them to study in a productive way. In order to address such questions, it is necessary to look at the more detailed aspects of the model.

2. LEVEL TWO: WHAT IS BEING ASSESSED AND HOW IS IT ASSESSED?

The first set of questions that needs to be asked is: what is being assessed and how is it assessed? The literature review and the primary data suggest that there are six main assessment items within design programs. These include:
- **project proposal** – an outline of a proposed project detailing objectives, aims, methods, material, context, purpose, performance criteria etc.;
- **models** – representational media including conceptual models, work-in-progress models and individual 1:1 prototypes;
- **drawings** – representational media including conceptual sketches, work-in-progress and final drawings;
- **presentation** – verbal presentation of design work to an audience of instructors, experts and/or peers;
- **portfolio** – an organised—curated or edited—collection of a student’s work designed to represent her/his achievements and effort over a period of time; and,
- **reflective journal** – a diary that encourages introspective and self-directed learning developed over time.

In conjunction, assessable items may include animations, sound files, concept books, websites, videos, project reports etc. The various outputs may be developed and presented using traditional design methods, materials and tools, or in digital formats and online.

In relation to the question ‘how is it assessed’, the research has identified six main methods for assessment:

- **tutorial, desk crit** – a discussion of an interim state of a project between student(s) and instructor during a design studio session. A tutorial/desk crit may be a one-one or a group session, and it will be generally formative in nature (also known as: studio crit);
- **crit panel** – an assessment activity in which a group of specialist assessors (typically made up of a collection of instructors, professional architects and external critics) give students verbal feedback on their finished projects or on a completed stage of the project. A crit panel assessment may be both formative and summative (also known as: critique; jury; panel; review);
- **esquisse** – an assessment type that was popular in the early Beaux Arts education. It denotes an intense period of design activity that will involve both focused and sustained effort, where the students will have to complete their work within a set timeline. It is often used as formative assessment in the early part of a design process, and then as a summative tool at the end of a semester of work (also known as: a charrette; design charrette; design exam);
- **exhibition or ‘pin up’ review** – a typically summative assessment practice whereby the student, upon completion of a creative work (design), is required to mount their artefact on walls or plinths and then leave. The work will later be reviewed by either individual assessors or a group of assessors, without the student present;
- **portfolio review** – a generally summative assessment type that considers a body of a student’s work and that can be used to appraise or critique a student’s performance over time. It is an assessment technique that enables consideration of process as well as product; and,
- **reflective journal review** – an assessment of an unstructured journal in which students record their reflections on their projects, including process, events, experiments and project related decisions. It will focus on process rather than product. A reflective journal review may be both formative and summative.

These assessment types will typically consider different assessment items, and they can be scaled according to the level of direct physical engagement of the student in the marking process (Table 1). For example, at one extreme, a student is the sole focus of a desk crit and is an active participant in the assessment process and physically engaged in it, whereas, at the other extreme, the reflective journal, their presence is virtual, there is little interaction and engagement is minimal.

<table>
<thead>
<tr>
<th>WHAT IS BEING ASSESSED</th>
<th>ASSESSMENT TYPES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tutorial, desk crit</td>
</tr>
<tr>
<td>Project proposal</td>
<td>x</td>
</tr>
<tr>
<td>Models</td>
<td>x</td>
</tr>
<tr>
<td>Drawings</td>
<td>x</td>
</tr>
<tr>
<td>Presentation</td>
<td></td>
</tr>
<tr>
<td>Portfolio</td>
<td></td>
</tr>
<tr>
<td>Reflective journal</td>
<td>x</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Each of the assessment types may occur at different stages of a design project, subsequently varying in their summative and formative emphasis. Despite noting that a wide range of different timings of assessment tasks might be possible, in practice there is a clear pattern in architecture schools governing when certain types occur. For
example, the tutorial or ‘desk’ crit, will typically occur throughout a design project at regular stages. The esquisse will normally be conducted at the very beginning of a course but may sometimes be repeated at its conclusion. Crit panels and exhibition/‘pin up’ reviews will typically occur at the end of a set task or a design project, as will the portfolio review and reflective journal review.

Table 1 illustrates the need to carefully consider assessment types according to the items that are being assessed. It emphasises the central position of the crit panel in design and architecture education; this being the only assessment type that constructively evaluates presentation. As such, the crit serves an important, some would say insidious (Anthony 1991; Stevens 1998), role as a site of enculturation in the verbal and strategic tools of design presentation and defence. It is, however, as will be illustrated in the subsequent sections, not sufficient as the sole assessment type for design. This argument is based on the observation that the crit panel, as all the other assessment types, will only adopt certain assessment support tools and enablers, which again will be restricted in their coherence to the different quality principles.

3. LEVEL THREE: ASSESSMENT TYPES, ASSESSMENT SUPPORT TOOLS AND ENABLERS

The contextual factors discussed earlier are expressed as pragmatic elements of assessment through two categories; assessment support tools and enablers. Assessment support tools refer to a range of procedures or schemes that ensure the quality of assessment, and typically include:

- criteria – an outline of expectations related to an assessment task;
- rubrics – a matrix or framework that outlines expectations or criteria used for assessment, and the associated levels, performance or achievement that are used to interpret and grade students’ performance;
- learning contract – an agreement between a student and an instructor concerning issues of assessment;
- exemplars or benchmarks – indicators of expected standards set by existing design work; and,
- moderation – a process whereby different assessors’ marks are compared to ensure that students are marked consistently across a unit.

Similarly, enablers refer to mechanisms that support various assessment types and that aim to enhance the quality of assessment, though, in contrast to assessment support tools, these include human beings who are directly engaged in the assessment process. Key enablers that may be employed when assessing students’ design work include:

- expert panel – an internally and/or externally sourced panel of academics and/or practitioners with specific expertise and experience that is relevant to an assessment task;
- external assessors – assessors drawn from academic or practice used individually or in a group setting;
- multiple assessors;
- self-assessment – a process whereby the individual student is placed at the centre of assessment decisions aimed at creating active learners and enhance engagement with and understandings of standards and criteria; and,
- peer-assessment – a process whereby students’ peers are placed central to assessment decisions typically involving students’ active engagement in learning tasks by identification of standards and criteria, peer feedback and adjustment of judgement against set standards and against others.

The different assessment support tools and the enablers are not exclusive but may be used in combination. They do, however, serve different functions in a given assessment situation and their usefulness will vary depending on the assessment type (Table 2).

<table>
<thead>
<tr>
<th>ASSESSMENT TYPES</th>
<th>ASSESSMENT SUPPORT TOOLS</th>
<th>ENABLERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Criteria</td>
<td>Rubrics</td>
</tr>
<tr>
<td>Tutorial, desk crit</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Crit panel</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Esquisse</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Exhibition, ‘pin up’ review</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Portfolio review</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Reflective journal review</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Table 2 provides an illustration of the most common patterns of use of different assessment support tools and enablers according to assessment types. For example, the learning contract is most commonly used in architecture schools as part of a portfolio review or a reflective journal review. Similarly, self-assessment is typically used for exhibited works, a portfolio or journal, but not for the esquisse or crit.

45th Annual Conference of the Architectural Science Association, ANZAScA 2011, The University of Sydney
Though it is possible to use the assessment support tools and enablers across the board of the assessment types, their effectiveness and suitability vary according to the nature of the design task, the learning objectives of the task, and the formative and/or summative intentions of the assessment. The general pattern recorded in the primary data collected for the present project reinforce the need to actively engage in the design of an assessment task and/or assessment protocol. It is important to carefully consider the purpose of an assessment task and identify how the assessment support tools and enablers may support students’ learning and their understanding and judgement of quality. This point leads to the fourth level of the model, which considers assessment support tools and enablers according to quality principles.

4. LEVEL FOUR: ASSESSMENT SUPPORT TOOLS, ENABLERS AND QUALITY PRINCIPLES

There are six distinct principles that support the quality of the assessment of students’ creative design work, namely: equity; reliability; accountability; validity; repeatability; and, sustainability. These six quality principles can be paired into three groups according to their focus on person, context or future (Table 3).

<table>
<thead>
<tr>
<th>ASSESSMENT SUPPORT TOOLS</th>
<th>ENABLERS</th>
<th>QUALITY PRINCIPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PERSON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equity</td>
</tr>
<tr>
<td>Criteria</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Rubrics</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Learning contract</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exemplar, benchmark</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Moderation</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Expert panel</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>External assessors</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Multiple assessors</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Self-assessment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer-assessment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Assessment support tools and enablers marked against quality principles

The principles related to person include equity and reliability, which both reflect the role of the individual assessor in ensuring quality. Equity refers to the requirement of non-discriminatory, non-biased assessment, where students of both genders and all background will have the same opportunities to demonstrate their knowledge and skills. Reliability, on the other hand, refers to the level of agreement between assessors and within assessors; that is, to the consistency of scores across multiple evaluators and over time. An assessment will be considered reliable when the same result occurs regardless of when assessment is conducted and who is in charge.

Context-focussed principles include accountability and validity. Accountability is an indication of the capacity of the assessment support tool or enabler to ensure that the assessment process meets a range of context specific factors. For example, that it is possible to map or cross reference specific assessment issues to the needs of a professional body. Validity refers to the degree of correspondence between what is measured and what is intended to be measured. It requires that objectives are clearly expressed and that they are measurable.

Future measures include the principles repeatability and sustainability. Repeatability refers to the extent to which the assessment support tools and enablers have the capacity to recur, at regular intervals, and the degree to which they are logistically, administratively and financially affordable. Hence, repeatability focuses on the long-term capacity of an assessment support tool or enabler as perceived from the educational institution’s standpoint. Sustainability, on the other hand, focuses on the long-term impact of assessment on the student. The notion of ‘sustainable assessment’ has been developed by Australian educationalist David Boud, who defines sustainable assessment as practices that encompass ‘the knowledge, skills and predispositions required to underpin lifelong learning activities’; that is, assessment that ‘meets the needs of the present without compromising the ability of students to meet their own future learning needs’ (Boud 2000: 151).

The quality principles, in particular accountability, validity and sustainability, bring the discussion back to the issue of context and the situated nature of certification and learning. Assessment and assessment practices have a huge impact on the quality of learning; summative and formative modes of assessment guide learning by determining the
agenda for learning, guiding attention to issues that matter, promoting student self-regulation, fostering reflection and providing information about progress (Boud 2000; Falchikov 2005; Yorke 2003). As such, assessment should develop the students’ ability to make informed judgements; that is, it should encourage contemplation and reflective learning and inform the process of promoting new practitioners (Boud & Associates 2010). Simultaneously, as articulated by the quality principles of equity and reliability, assessment must be fair and objective. Table 3 illustrates how it is necessary to develop an assessment scheme that employs different tools and enablers. For example, whereas validity and repeatability rely on the more objective, often pre-defined, assessment support tools, sustainability is dependent on often subjective—or reflexive—feedback from experts, peers and self. Similarly, whereas the inclusion of representatives—academics or practitioners—of the professional body in the assessment process can ensure accountability, reliability and sustainability, it will not influence the validity of the assessment and it will often be expensive and, hence, not inclined to the principle of repeatability. Criteria and rubrics may be affordable and they may support the quality principles that lead to fair and objective assessment, but, due to the summative quality of the assessment support tools, they will not by themselves advance present and life-long learning.

Though both assessment support tools and enablers may support learning through formative assessment and certification through summative assessment, the former will only do so when applied in combination with one or more enablers. The assessment support tools are, ultimately, tools that support the assessors in the process of assessing, and they are not in themselves conducive of reflection and life-long learning. Indeed, as many of the study participants argued, students may not be aware that these tools exist, let alone knowing how to use them to advance their learning. They can, however, support learning when employed in a formative environment guided by one or many enablers. This demonstrates the role of constructive, often subjective, feedback—from experts, peers or self—in the development of active learners and future reflective practitioners, and the need to include formative assessment processes in any assessment scheme. Whereas summative assessment sets the ‘de facto agenda for learning’, it is formative assessment that aids learning by guiding ‘us in how to learn what we wish to learn and [telling] us how well we are doing in progress to get there’ (Boud 2000: 155-6).

CONCLUSION

One of the main issues rising from the multilayered model proposed in this paper is the need to actively engage in the design of an assessment task or assessment protocol by carefully considering the composition of the various elements and their purpose. The model is the first of its kind and it clearly illustrates the apparent, yet often overlooked, need to, first, acknowledge and consider the context of which the assessment task is part. Second, consider the medium for expression; that is, the means through which the students may address the aspired learning outcomes and develop their knowledge and skills. Third, purposefully link the choice of assessment type with the outcomes that are being assessed, and, forth, correlate the assessment type with appropriate assessment support tools and enablers that, over the duration of the students’ degree, will develop the aspired skills and knowledge identified by the professional body. These observation lead to four key questions that may assist educators when designing an assessment task/protocol:

1. What is the overriding goal for learning underpinning the assessment task, and how may the task assist the students as future practitioners?
2. What is the best medium for the students to enhance their learning and explore and develop the skills targeted by the task?
3. How can the outcome of the task be assessed; what is the most appropriate assessment type?
4. What assessment support tool and/or enabler may be used for the assessment task to ensure that the assessment is equal, reliable, accountable, valid, repeatable and sustainable?

Careful analysis of the model indicates that there is a pattern underpinning assessment that scales the assessment support tools and the enablers, as well as the quality principles, according to anticipated objectivity and subjectivity, and summative and formative qualities. Whereas the quality principles of reliability, validity and equity place demands for objectivity and transparency, sustainability and, to some degree, accountability rely more on subjective feedback. As such, the former quality principles will be more conducive to summative assessment and certification, whereas the latter are more inclined to support formative assessment and enculturation. This observation has implications for the assessment of creativity as it provides space for individual growth through reflection and subjective feedback from experts in the field. It illustrates the need to maintain a dialogue with the student about their creative process and, subsequently, enhance their understanding and judgement of what constitutes creative design solutions in an evolving field. At the same time, the observation illustrates the need to carefully consider how creativity—as a skill, tool or method guiding the design process and/or a characteristic of the final product—forms part of the assessment task and its learning objectives, and the need to employ means that lead to objective, transparent, fair and equal assessment of the student’s creative efforts. As an aspired learning outcome, creativity has to be subjected to both summative and formative assessment processes; it has to be assessed for certification and learning purposes. This requires an objective and transparent framework that simultaneously provides room for reflection and subjective feedback and critique. By identifying the various elements of the assessment process, the model proposed in this paper is a step in this direction.
ACKNOWLEDGEMENT

Support for this paper has been provided by the Australian Learning and Teaching Council Ltd, an initiative of the Australian Government Department of Education, Employment and Workplace Relations. The views expressed in this paper do not necessarily reflect the views of the Australian Learning and Teaching Council.

REFERENCES


