

vGALLERY SCAFFOLDING REFLECTION IN ACTION FOR STUDENTS AND TEACHERS

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Abstract

vGallery is an online exhibition, assessment and feedback system which can be configured to support confidential online evaluation. The contribution of vGallery to reflection in action derives from its ability to prompt and disclose the teacher's formative thinking about assessment and for students to self and peer assess on the same criteria, by applying the same standards. vGallery was developed during a CUTSD-funded project which has, over the past three years, explored the support that e-learning can provide to develop, support and evaluate higher order learning skills (specifically reflection in action) in early design students through digital delivery and digital making.

Keywords

reflection in action, online assessment, self-assessment, peer assessment, online evaluations, collaboration

Introduction

Reflection in action is an essential component of high quality learning experiences—a component identified as an essential graduate attribute (Boumelha, 2001). Our view is that *learning* is qualitatively distinct from *training*, and that teaching must be aligned with the achievement of deep learning approaches. As Biggs described 12 years ago, ‘Teaching that gave evidence of deep learning contained in sharp form one or more of the following: an appropriate motivational context; a high degree of learner activity; interaction with others, both peers and teachers; a well-structured knowledge base.’ (Biggs, 1989, p. 17)

Deep content learning occurs best when there is an intersection of motivational context, learner activity, interactive context, peer interaction, ownership (of learning and outcomes) and embedded teaching (Biggs, 1989, p. 19). Teaching practice that supports this alignment provides scaffolding for the development of reflection in early tertiary students using digital tools (Radford, Shannon, Mullins & Woodbury, 2001). We have developed vGallery as a tool to support collaborative and reflective learning that embodies these principles (Woodbury, Roberts & Shannon, 2000).

Appropriate Motivational Context for Reflection on Action

Reflection for learning builds on Schön's reflection in action: the process whereby the cycle of thinking, making, reflection, thinking, making and reflection iteratively conceives of a new design response to analysis and synthesis (Schön, 1983, p. 68). Our valuing of reflection for learning is informed by the framework of Biggs. His SOLO taxonomy for scaffolding higher order skills relates better learning outcomes to moving up the taxonomy from simple tasks of naming, memorisation, and learning procedures through to the higher order skills of reflection, hypothesis, generation, application to far domains and relating to principles (Biggs, 1999, p. 47).

Biggs associates deep learning outcomes with a teaching environment that uses teaching and assessment methods that support the explicit aims and objectives of the course (Biggs, 1999, pp. 16-17). Prosser and Trigwell (Prosser & Trigwell, 1999, p. 4) further associate deep learning outcomes with perceptions of a clear awareness of the goals and standards required in the subject. vGallery was developed to support reflection in action through making the goals and standards explicit.

Games Ensure a High Degree of Learner Activity and a Well Structured Knowledge Base

In those courses that are the subject of our CUTSD project, *Reflective Making: Higher Order Learning in Early Tertiary Architectural Education*, content has been distilled into a number of digital interactive exemplars that ensure active engagement. A current initiative within our School has been the reframing of student exercises as 'games'. Games develop and exploit the nature of play as a way of learning (Callois, 1961). The game provides a motivational context of intrinsic interest through active involvement in the planning and delivery of the game play and outcome (Woodbury, Shannon & Radford, 2001). The game is a reusable container exemplifying a process of analysing, evaluating and synthesising through engagement with content, peers and teachers.

Games are freely distributed using the worldwide web (AU, 2001), and games play outcomes are exhibited on the vGallery, (AUO, 2000). Assessment and evaluation capabilities have been added to vGallery to scaffold the development of higher order reflective learning for students.

vGallery Scaffolds Reflection through Interactive Content and Peer Interaction

While implementing Adelaide University assessment confidentiality policies, vGallery allows students to view online their own detailed feedback while generating collated assessment reports for the teacher/curator. As reported elsewhere, vGallery is an online exhibition, assessment and feedback system that enables many roles (Woodbury et al., 2000):

Teachers as curators are able to:

- configure the exhibition space to meet their pedagogical requirements;
- articulate assessment protocols including the enumeration of dimensions of assessment and their relative weighting using Likert scales (Mogey, 1999);
- allow/require students to reflect on their own and/or their peers' work as self or peer-assessors; and
- view peer, self & teacher critiques alongside the student's work and in collated form.

Students as exhibitors are able to:

- post their work via the World Wide Web;
- critique/reflect on work of their own or their peers using teacher-defined protocols; and
- access their confidential assessment online.

Assessors/ critics are able to:

- provide detailed confidential feedback within the protocols defined by the teacher.

As a result, vGallery presents interdependent opportunities to scaffold reflection.

The teacher's:

- professional thinking is revealed in planning the categories for criteria-based assessment;
- dimensions for completeness of a piece of assessable project work, (criteria), are established;
- holistic judgment is made explicit; and
- scoring against a Likert scale records the degree to which a piece of work has achieved the stated criteria.

The student's:

- self-judgement is fostered and tested for the extent to which they have succeeded in applying the criteria for assessment at a high standard to their own work on the same criteria and using the same standards as the teacher used; and

- assessment of a peer's work is exposed through the explicit application of established standards to established criteria as a tool in developing and applying self-judgement in a collaborative environment; just as

The **peer's**:

- assessment is received and compared to the teacher's judgement. This provides an opportunity to receive assessment in a collaborative environment where the teacher's judgment remains a referent.

In summary, **students' learning** is advantaged through opportunities to develop self-judgement, which is an essential element in the development of reflection in action, through:

- applying self-assessment utilising clear standards derived from the subject aims;
- applying established standards to their peer's work; and
- comparing their judgement with that of their peers and of the teacher.

Evaluation

The games and vGallery evaluation utilised a formative, summative and illuminative quantitative and qualitative methodology framework discussed by Oliver (Oliver, 2000). We have reported elsewhere on the preliminary findings concerning the effectiveness of games (Woodbury, Shannon & Sterk, 2001), vGallery (Woodbury et al., 2000) and the efficacy of the evaluation methodology (Shannon, 2001).

The evaluations reveal that different types of assessment contributed differently to students' learning. Whilst the *quantitative* evaluation is not significant that better students became more expert judges of their own, or their peers' work, than weaker students, when the teacher's judgement is used as a reference, *qualitative* evaluation reveals the contributions formative assessment plays in the students' learning to increase the likelihood of students becoming more accurate judges of their own and peers' designs.

The evaluations support the ability of vGallery formative assessment to contribute to scaffolding learning through making the assessment modes of the teacher, student and peer explicit (Prosser & Trigwell, 1999, p. 128). A vGallery confidential evaluation asked students to reflect on the differences between the information they gained from reflecting on teacher, and self-assessment.

What information did you gain from the teacher's assessment?

Student a The information gained from the assessment was very clear. The assessment criteria were outlined and I was able to also give myself an evaluation. The assessment was very useful, particularly for future projects, because it covered so many facets of the design task and the experiences created within each project.

Student b From the teacher's assessment, I can gain more information on the weakness that I have and the things that I am good in.

What understandings did you gain from completing your own self-assessment for the project?

Student c It let me compare the mark that I thought I should have got to the one allocated to me. This put me in the marker's place and a gained a greater understanding of the process that they undertake.

Student d I now know how it feels to assess work!!! It gives you a true reflection on work by having categories only directly concerned with the task and no 'bonus' areas. By completing the self-assessment, I was able to give more energy into the assessment dimensions, and realise the true purpose of the assignment.

What links can you see between the teacher's assessment, and your self-assessment?

Student e Susan is more in depth than I am, but we more or less thought the same things were lacking.

Student f Most links were very similar if not the same. This showed me that in many areas I was approaching the assignment in the correct way.

Conclusions

Our proposition from conducting illuminative evaluations in classrooms of early learners for three years is that students' reflection in action is a learned and modelled process: a skill, not a talent. It

can be taught, and the teaching can be aligned with making teachers' judgements transparent, which of itself develops processes for fostering reflection in action for teachers. vGallery's enumeration and disclosure of the teacher's assessment categories and standards, and support for student's self and peer assessment online supports this process.

For students, scaffolding higher order skills of reflection in action is developed through their application of the clear goals and standards, enumerated and disclosed as criteria and standards on the vGallery assessment scales, to their own, and their peers' work, and through comparing their judgement with that of the teacher.

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Note

Since the completion of this paper, Robert Woodbury has been appointed the Professor of Information Technology and Interactive Arts at the Technical University of British Columbia.

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