WIN, WIN, WIN – AN ASSESSMENT SYSTEM THAT WORKS FOR STUDENTS, STAFF AND THE ACADEMY

Daniel Carroll, University of New South Wales, UNSW Business School, Australia

This paper provides a case-study of Review, a direct-marking and assessment management system in use at the University of New South Wales (UNSW), Sydney, Australia. The current state of theory and practice in systems facilitating assessment for learning are discussed, before essential features of future oriented assessment management systems are proposed. The underpinnings and affordances in our experience of using Review for students, staff and administrators are then described. Review, designed by academics for academics, is used in several Australian universities, and in three faculties, over one hundred courses and by thousands of students and staff each semester at UNSW. A brief description follows.

Review is used for both direct criteria based marking and as a marks repository for collecting assessment data for courses and Program (Degree) assurance. Feedback is provided through Review, and internal mapping connects criteria marks to course, degree and Program outcomes. Therefore, assessment data is connected across the length of student degree programs. Native affordances of the system are described. The focus of this paper is on how the system supports a holistic approach to assessment activity for markers, students and administrators. This case-study outlines how this 'virtuous cycle' supports and improves student learning, staff assessment and Program (Degree) assurance and reporting over previous processes. This is exemplified with detail of the system's learning / assessment data structures, the intuitiveness of its interfaces and workflow designs, marking efficiencies and the supportive richness of the data recoverable by all users.

Current state

Current university wide assessment management systems typically record the crumbs of student achievement. In many cases, central systems hold only a final course mark and associated course grade. Some carry the records of the component course task marks. However few university wide systems carry the substantive marks data set that tracks the detail of student achievement at levels below the task mark. Even fewer universities preserve and centrally record the richness of the formal feedback and advisement provided by staff resulting in a loss of business intelligence, effort and the inherent value of feedback to students, staff and the organisation.

Consider that inside tasks, student performance is judged in fine detail. These judgments of and feedback on 'learning moments' are invaluable as a record for students and for

universities. They exist in myriad contexts, separated in time, sometimes 'live' and unrecorded, often held in a range of disconnected systems. The opportunity cost of unrecorded feedback is an irredeemable severance of future connection by systems based approaches to these learning 'moments' – for all parties.

Typical legacy university assessment systems record a thin trail of evidence of student achievement and progression. Often this is a simple as a final summative mark per course and subsequent grade. A pastiche of passing grades equates to a degree. But this provides little vision into the depth, variety and quality of the component parts of the individual's learning. For the individual, these legacy systems tend to alienate, reduce their learning to a summative judgement that reduces their learning experience to a number or a grade. These approaches provide no satisfying basis to reconnect the learner with their experience of learning, which was hopefully rich but is in no way reflected through the records system.

By the same degree, the failure to collect granular data on graduate's professional and discipline skills development, denies the institution insight into its people, processes, courses and programs. Informed by the recent advances in Learning and Academic Analytics, a great opportunity exists for more meaningful approaches to assessment (both formative and summative) to support learning (Dawson, 2012). A more constructive, holistically envisaged and systematically embedded management of assessment, feedback and learning progression is needed. This is the landscape for future assessment management systems to articulate and thoughtfully connect learning and assessment.

The success of transitioning to future assessment systems depends on an alchemical dance, where institutions embrace the challenge to transform and re-imagine practice, producing articulate and elegant systems design. These will demonstrate significant and immediate connection and efficiencies with all stakeholders (students, staff, managers and external bodies). Assessment systems design must embody the underlying intentions, and implicitly communicate what we value.

Therefore, future assessment systems must be designed from a base of the explicit articulation of what are the core institutional values and aims around learning. Value-Sensitive Software Development offers a framework for referencing the development of more explicit institutional 'fit' between the software systems we create and the ethos, intention and practices of education.

Optimally, the development of educational assessment management systems rests on respect for the whole learning community, its goals and its members. Future systems need to accommodate the legitimate needs and aspirations of the learners, staff and the academy. To conclude, future assessment systems will be more than simplistic marks repository and will be informed by achievable learning Analytics approaches (Dawson, 2012).

This paper advances Review as a successful example of a 'future assessment' system, agile, user-centric and holistically designed to concord with institutional values (promotion of learning). In Review, activity (framing assessments), achievement (judgement outcomes of

assessment) and feedback is explicitly, efficiently and ubiquitously linked to learning progress degree / program learning goals achievement, benefitting all parties.

Developed by Darrall Thompson and Mike Howard of the University of Technology, Sydney, is used in several Australian universities and has won national awards for educational technology innovation (Dawson, 2012).The system can carry description and data of formative and summative assessment events. Marks data, entered directly or imported, can be tagged for course marks finalisation, as barrier (must pass) course components and for inclusion or exclusion from course and program assurance reporting. The PHP – Apache base enables provisioning course and student feeds and outward marks transfer to established data-marts and other systems.

Affordances for students: direct marking

- Performance standards are explicitly framed through criteria frameworks;
- In-built self-assessment increases student engagement and focus;
- Student reflection through student comments facility;
- Performance based feedback is more targeted and actionable;
- Self-assessment is positively viewed by our students;
- Feedback can be attached in commented files to students;
- Not semester limited, so students can both look at past feedback;
- Run reports on their progress over time against tasks, criteria, Program Learning Goals and University Graduate Attributes.

Review's criteria based approach improves clarity around assessment for students. Markers explicit detailing of judgment criteria provides a common understanding of the judgment frame for both markers and students. Student self-assessment encourages student engagement with assessment, reduces passivity and develops a focus on developing accurate discipline self-judgment skills (Boud, Lawson & Thompson, 2013).

A 2013 study reported positive attitudes to the practice of self-assessment in Review at UNSW. Self-assessment and developing self-assessment accuracy were overwhelmingly viewed as a valuable professional skill. Despite positivity about embedded self-assessment practice, students reported that this was relatively infrequent – revealing a gap in the curriculum design of our courses and Programs. Students also commented on the targeted feedback provision and the clear, visually engaging interface. Research that suggests student engagement in assessment reduces passivity and encourages cognitive engagement was echoed by our students:

> *'It has certainly helped me think about how I can better approach not only this assessment but more assessments in the future' and 'Self-assessment generates the building blocks to improvement – I wish a lot more of my courses would utilise this self-assessment tool' (Caroll, 2013)*

Apart from task-based feedback, Review provides a more personalised learning experience through ongoing access to feedback and performance from past courses. Students can run task or longitudinal self-reports at the criteria, task, course, year and Program (degree) level.

Student access to personal, systemic, cross-course, longitudinal mapping of their achievement from criteria / task marks to higher order skills is rare in the Higher Education sphere. This encourages students to take a Program view of learning and the formation of professional skills and attributes. Essentially, this represents the ethos of 'inclusive' design in this assessment feedback system, where learner needs are as central as institutional needs.
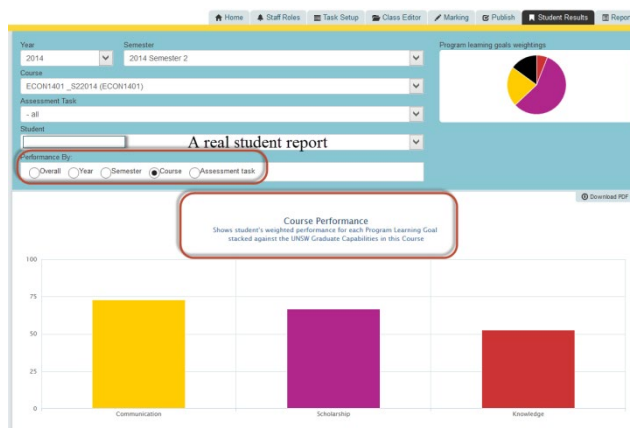

Figure 1. Student self-generated course report

Affordances for staff

As a direct marking system, Review's requirement for using criteria supports the embedding of our University's policy on standards-based assessment. Legacy practices persist, but the demonstrated efficiencies are persuading staff to adopt a systems based approach based on sound pedagogical principles. The visual, intuitive, online marking interface improves the experience of marking and of giving and getting feedback.

Table 1:   Review marking affordances

Marks administration	Marking practices
Connects with central course enrolment provisioning	Criteria focus frames judgement / assist markers / motivates students
Restorable tasks and courses	Fast intuitive marking interfaces – reduces marking time
Reusable comment library banks	Self-assessment focuses students on task
Works with tablet voice to text marking in library	Allows feedback from students
Assists marker standardisation processes and feedback quality monitoring	Reusable comment library banks
Assessment dashboards	Shared online real time access for marking team
Banks of data and graphical reports	Works with tablet voice to text marking in library
Speeds course marks finalisations process	Accepts task and individual feedback file attachment
Longitudinal access to centralised records	

The required step of defining criteria to students provides a judgement frame, which shows novice learners what an expert values and judges on, in a discipline context. Academics report that this step assists them with subsequent marking. In addition, marking on a scale, delineated by the familiar grade performance markers, focuses markers on the student performance 'level of quality' against individual criteria and the overall task. System settings hide raw numbers, so markers are encouraged to consider quality – not assign marks.

Marks lie behind the judgement made on criteria and overall marks sliders. Criteria and overall judgment sliders can be balanced (Figure 2). Use of sliders is intuitive, requires little training but pays immediate efficiency dividends. The marking decisions are editable, and provide rapid visual feedback on the judgement (black triangle), student marks estimates (blue), the average mark of the cohort (grey) and auto-totalling, eliminating manual calculations and error.
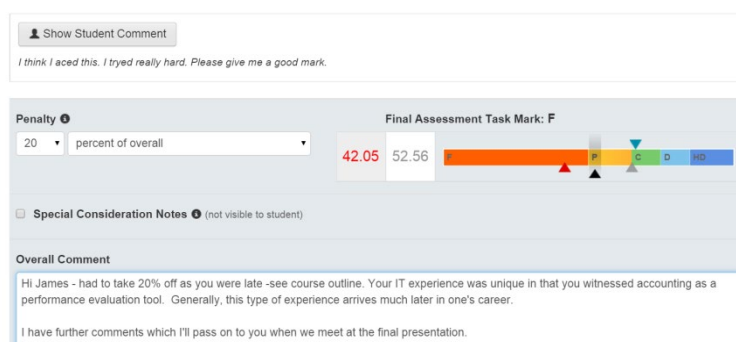

Figure 2. Overall marking and comment feedback box

The Comment Library feature (Figure 3) accelerates the provision and ongoing improvement of quality feedback. The ability to share, edit and reuse a marking team's real-time and historical feedback promotes a positive marking culture of sharing and improvement and alleviates marking stress. Staff can view, share, edit and improve colleagues stored library feedback, encouraging a 'virtuous cycle' of continuously improving feedback to students. The experience of giving written feedback, too often an isolating, repetitious and dispiriting feature of academic responsibility, is transformed through the affordances of online marking banks and collegiate input.
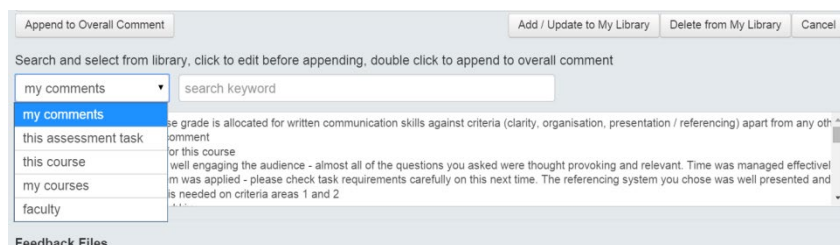

Figure 3. Comment Library

Course assessment administration is assisted via a range of visual 'home' screens. These include heat maps of student achievement at the criteria and task level and banks of online reports (Figure 4) that facilitate monitoring marking progress and outcomes. Improved in-built course assurance processes catch problems (e.g. inconsistent marking standards in team

marking). In summary, these processes have a range of beneficial effects. We have observed improved marking speeds, a concentration of marking processes, reports of improved feedback quality, easier marks assurance, more efficient course administration. Our conclusion is that the use of Review has resulted in a greatly enhanced staff and student experience of assessment.
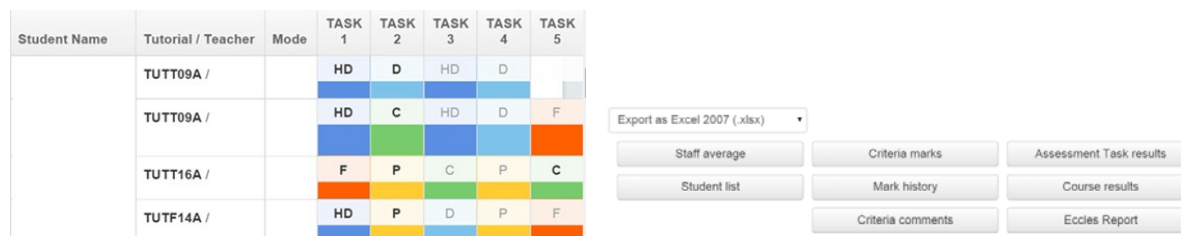

Figure 4. In-built Task Performance Heat Maps and Course Reports

More extensive evaluations of Review's impact are planned, but early evaluation rounds have drawn positive responses from UNSW academics. A 2012 Faculty staff survey reported substantial marking time savings averaging up to 20% (UNSW, 2012a). Comments included:

> *'Review improves marking efficiency and helps me moderate and benchmark my tutors' marking more easily … criteria-based feedback has reduced my post-assessment correspondence with students.' Gigi Foster, Lecturer.*

> *'Feedback from tutors has been overwhelmingly positive … it has elevated the reliability of their work and cut the time that is required for giving feedback.' Sallyanne Gaunt, Lecturer, UNSW.*

However, the most positive indicators of success are uptake: from a start point in four trial courses in 2011, year on year provision of Review into courses has grown and to over one hundred courses per semester.

Affordances for Faculty / University

We have described above how Review provides a platform that supports learning, enables better described assessment, improves marks administration and the 'experience' of assessment. Its organic growth at UNSW has been driven by the inbuilt affordances for students and staff. Staff 'buy-in' to this assessment system has grown in a way that many top-down, compliance-motivated assessment systems struggle to achieve.

Analytics for course and program assurance reporting are provided through the inbuilt querying interface. Bottom to top data mapping, allows course task data to be meaningfully represented at a variety of levels, including being 'rolled-up' to Program or university graduate attribute levels (Figure 5). The data is course assessment data, intimately connected to our core business and evidence of how we foster learning and student professional development. This approach improves the 'vision' of Schools, Faculties and the university into student, course and program performance with more meaningful and granular data. Program Directors in the UNSW Business School regularly run course and Program reports to analyse

performance as part of the 'closing the loop' assurance process and work is proceeding on extending and automating these reports processes to course and task levels.
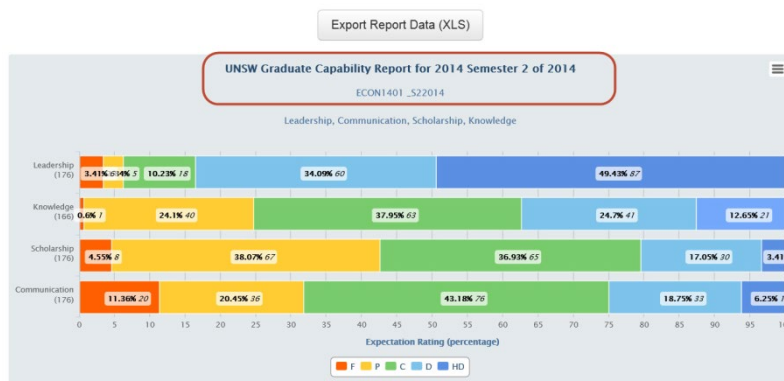

Figure 5. Program (Degree) and University Graduate Attribute Reports

Review supports our university's policy on embedding standards based assessment in an integrative way across the institution. The widespread use of a system that systematises good-practice around explicit description and processes in assessment, while supporting learning and improving efficiency and quality, is changing teaching practice in a research-intensive, research focused environment – for the better!

Finally, let's not forget what this is all about – better learning experiences for our students. As assessment directs and drives learning, we have to design holistic assessment systems that support improvements in the experience of assessment, the associated learning and development of self-regulating, professionally oriented graduates.

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