EPORTFOLIOS FOR EVIDENCE OF INDIVIDUAL CONTRIBUTION TO GROUP WORK: A BENEFIT AND BARRIER

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Abstract

ePortfolio software applications provide a range of functionality that can be used to provide students with structured learning experiences and assessment at individual and group level. To date, the authors have varied their use of ePortfolios in three units, postgraduate and undergraduate, and evaluated the outcomes from student and staff perspectives. Two key intended outcomes from the staff perspective are that individual students analyse and reflect on their contribution to group tasks and that the ePortfolio provides evidence of their individual contribution and enable individualised assessment of group work.

This paper describes the use of ePortfolios in two postgraduate and one undergraduate unit. Students enrolled in the postgraduate units submitted two ePortfolios for assessment, each weighted 10%, describing their contribution and reflecting on group practice to provide evidence of contribution to their group. Students in the undergraduate unit submitted an individual ePortfolio as a 20% component of a group assignment worth 30% (six possible marks). In both cases, students were required to use the PebblePad ePortfolio software and access it via a link separate from the University Learning Management System (LMS).

From a staff perspective, the objective of using ePortfolio assessment to provide evidence of individual contribution was realised. It facilitated the identification and individual assessment of students whose lack of contribution had not contributed to the group output being assessed. This evidence then resulted in the marks for the group assessment being realigned without the need for face-to-face negotiation and possible confrontation.

Postgraduate students responded well to the use of ePortfolios as a separate assessment task with substantial weighting. ePortfolios were integrated with the other assessment pieces providing a holistic approach to the assessment process. However the undergraduate student responses in the unit evaluation provided evidence that the cognitive load required to learn PebblePad software was considered unreasonable for a 6% weighting.

Using the ePortfolio as a component of a group assignment integrated into the assessment has clear benefits in individualising group work. The authors next intend to explore whether use of an ePortfolio tool, embedded in the Learning Management System students are already familiar with, will reduce the perceived cognitive load for those students and result in students perceiving the benefits of increased transparency in assessing individual contributions to group work, even in the case where ePortfolio is a small component of the assessable task.

1 INTRODUCTION

This paper describes two assessment designs incorporating individual ePortfolios using the PebblePad software (accessed outside the University Learning Management System (LMS) via a link). The assessment for the postgraduate units was designed as a separate task that was aligned to and integrated with a 20% group assessment task. In the undergraduate unit, individual ePortfolios were assessed as a 20% component of a group assessment task weighted at 30% of the total mark, an actual weighting of 6%. The paper reports the outcomes and benefits of these designs from a teaching perspective. The responses from postgraduate (positive feedback) and undergraduate (negative feedback) cohorts are compared and we propose that different cohort responses to the assessment task may stem from different levels of cognitive effort, relative to assessment weighting, to learn the ePortfolio software as well as demonstrate achieving the intended learning outcomes (ILOs).

The University of Tasmania (UTAS) has implemented a new LMS (branded MyLO) that includes an ePortfolio module. We outline a proposal to explore to what extent use of an embedded ePortfolio tool, with the same 'look and feel' as other LMS modules, will reduce the perceived cognitive load of

learning a 'new' eLearning technology and result in students' perceiving the benefits of increased transparency in assessing individual contributions to group work, even in the case where ePortfolio is a small component of an assessment.

2   DESIGNING ASSESSMENT

2.1   The rationale for ePortfolio technologies and group work

UTAS, like other Australian universities, is aware of the need to produce 'well rounded' graduates. Employer feedback supports this with a shift of attention from core knowledge to core knowledge and soft skills. These soft skills include communication, problem solving and teamwork. To this end UTAS has produced a list of Generic Graduate Attributes (GGAs) as a set of common outcomes that is expected all graduates will develop in the course of their higher education studies. UTAS's graduate attributes are: knowledge, communication skills, problem-solving skills, global perspective and social responsibility [1]. Aligned with the GGA focus is teamwork. Students are often asked to complete tasks associated with problem solving by working in teams. Courses are mapped to ensure the GGA are delivered in a scaffolded approach to the students from their first year until their final year of study.

At UTAS, international students predominately undertake postgraduate coursework programs but significant numbers also enrol in the undergraduate programs. Many international students enrol in Australian university courses with minimum level English language skills. Additionally, their previous educational experiences have embedded culturally based approaches to pedagogy adopted within their home countries. In particular, an emphasis on rote learning does not prepare international students with skills for developing graduate attributes such as problem solving, communication and critical analytic thinking skills.   Australian universities, particularly those with large numbers of international students, thus face considerable challenges in effectively delivering their programs.

The aim in redesigning the first masters unit to have a Problem Based Learning (PBL) approach was to engage students in active learning and move the unit to the next level on Kirkpatrick's [2] teaching evaluation framework. Students were encouraged to actively engage with both the material and the problem to move towards producing quality solutions. The redesign resulted in improved attendance and participation rates in the unit. Overall there was significant improvement in attendance and engagement for students. More importantly the PBL approach overcame the recognised difficulties of engaging international students in new styles of learning. The second masters unit was designed as PBL from its first delivery.

The authors are committed to evidence-based interventions in unit design and delivery and embed systematic evaluation and critical reflection into teaching practice. In particular, we ensure the student lens is applied to the outcomes of any change in unit design as well as utilising peer review, literature and critical self-reflection on our teaching practice [3]. Our teaching approach includes a strong emphasis on students engaging in collaborative learning, with assessment and evaluation moving towards and integrated design. The recent introduction of Criteria Referenced Assessment (CRA) by UTAS to facilitate transparent and holistic alignment between ILO and assessment tasks has supported this approach.   The use of ePortfolios as a mechanism for students to demonstrate individual attainment of ILO and GGA while providing evidence of individual contribution to group work has resulted in evidence based evaluation.

Students recognise the value of working with other students with diverse skills and knowledge [4] however individual students can be disadvantaged by group work that is assessed with a group mark. The assumption in assessing group work is that students have contributed equally both intellectually and practically; in reality some students contribute to greater levels than others, leading to perceptions of unfairness. Managing lack of contribution is time consuming and generally requires negotiation between the academic and students, especially in cases where a student's contribution is minimal or negatively impacts on the group mark.

Learning technologies provide mechanisms for educators to facilitate, as well as provide support and monitor student learning. PebblePad ePortfolio technology provides students a tool to document their individual learning journey. They do so by creating 'assets' that can function as evidence of engagement and participation in learning tasks while scaffolding critical reflection on both group and individual learning. Assets are best described as digital items: ideas, evidence, reflections, feedback, data which 'present' a selected audience with information about the subject of that ePortfolio [5] ePortfolios also provide a mechanism for individual students to demonstrate their contribution to group

work and allow for differentiation within a group based on evidence of contribution. The academic and students also use them to discuss individual learning and evaluate individual, or group, progress [6].

2.2 Postgraduate Unit Assessment Design

In 2010 two units in a Masters of Information Systems (MIS) at UTAS were developed using a PBL approach for their delivery. PBL uses three core strategies: initiate learning with a problem; make exclusive use of real world problems; and use the lecturer as a facilitator [7]. The development of the problem and how to resolve it is more critical than the solution [8].

The majority of enrolments in the MIS were international students mainly from China, India, Malaysia and Saudi Arabia. An aim of using a PBL approach in unit design was to increase the level of engagement and participation of students and provide an authentic learning experience. Other units in the MIS program had adopted a more traditional teaching pattern of lectures and tutorials as a way of managing students' apparent lack of engagement and unwillingness to actively participate in their learning, by not requiring active participation in their own learning. This approach did not enable facilitating assessing ILOs of teamwork, communication skills and critical self-reflection.

Both units were delivered over a period of nine weeks in three-hour intensive workshops. In each unit, students were presented with a real world problem for solving in the first workshop along with the normal introductory material covered in a unit. The problem was relevant to the knowledge-related ILOs for both units. In addition the students were provided with an overview of PBL as a learning approach and taught concepts of lateral thinking and group work in preparation for the problem solving tasks they were about to undertake. The knowledge content for each unit was delivered in the next six workshops using a mixture of teacher delivery and student generated research for content. Both units required students to work in teams of six, with students rotating the role of 'leader'. The leader's role was to produce a report presenting and synthesising the group's collaborative work for the topic that workshop. This report was marked as an individual assessment task. The final two workshops were devoted to students working in teams to develop a solution to the problem that drew on and synthesised the knowledge acquired in the previous workshops. This was a group assessment task.

The PebblePad ePortfolio technology was the tool provided to students to incrementally record and reflect on their learning journey, as individuals and as a contributor to group work assessed. Students were required to create a variety of asset types such as 'action plan', 'meeting' or 'thought' over several weeks and then aggregate them to create an webfolio asset (ePortfolio) for assessment. It was assessed as an individual task but also used to inform the group assessment task in cases where individual students had not contributed.

Students were required to prepare two ePortfolios, one based on the workshops conducted from workshops 1 to 7 and the other from workshops 8 to 9. The students worked in assigned groups to explore the theoretical content of each of the units separately in workshops 1 through to 7. The Workshop ePortfolio provided a mechanism for the students to reflect on the theoretical content, their group and their individual performance. The students were then assigned to new groups for workshops 8 and 9. The Problem Solution ePortfolio provided the students an opportunity to document and reflect on their new group and their individual contribution towards the solution of the assigned problem. Table 1 sets out the assessment type and weighting.

Table1. Assessment Weighting (*group mark)

Masters Unit 1	Masters Unit 2
Participation 10%	
Presentation 10%	
Leader's report 20%	Leader's report 20%
Peer/Self Review 10%	Peer/Self Review 10%
Workshop ePortfolio 10%	Workshop ePortfolio 10%
Combined assessment across Unit 1 and Unit 2	
Problem Solution ePortfolio 10%	
*Solution to the problem 30%	

Assessment tasks were aligned and integrated to measure both individual learning and individual contribution to group learning.

2.3 Undergraduate unit assessment design

The third year undergraduate unit used a blended mode of delivery (face-to-face workshops and a weekly Module of online material on the unit's MyLO site). Each Module consisted of a Learning Object and an assessable task. Learning Objects "are generally small, self-contained artefacts, designed to address a specific learning objective, usually a single lesson about a particular concept" The Learning Objects provided the theoretical knowledge component of the unit in the form of discrete narrated PowerPoint presentations [9]. Students were required to listen to the Learning Object and complete the problem-solving task assigned at the end of each Learning Object prior to attending the face-to-face workshop. Students were required to complete and submit their individual answer to MyLO the day before the workshop each week. This strategy ensured students arrived at the workshop ready to engage with the material in the face-to-face learning environment.

The weekly face-to-face workshop involved students working in groups to share their individual solution to the workshop material and construct a group response. Each group would then share their solution with the rest of the class. The academic then discussed the various contributions emphasising relevant parts of the student solutions with comments to add depth and insight, leading to articulating a shared understanding of a solution that best reflected current knowledge and practice for that topic. The submitted workshop material along with attendance and participation was included in the calculation of the workshop participation mark for the unit.

The internal assessment for the undergraduate unit was designed to focus on the workshop as the primary delivery mechanism in order to engage students in an interactive and challenging learning environment. The workshop material was completed in advance of the face-to-face workshop and submitted to the MyLO LMS. As a result the face-to-face workshop time was more meaningful as students had already reflected on the workshop material and were able to enter into meaningful well-reasoned discussions. The workshop component was weighted at 20%.

The remaining 40% related to the practical aspect of the unit, investigating the implementation of ICT in an organisation and writing a Business Case evaluation of an organisation decision. This component was weighted at 30% along with a 10% presentation as a mechanism for students to communicate the outcomes of their evaluation.

The final assessment component was a 40% exam based on the workshop material. It provided a mechanism for students who had worked hard in the unit, completed and attended the workshop material to excel. Table 2 sets out the assessment type and weighting:

Table 2. Assessment Weighting (* group mark)

3rd year undergraduate unit
Weekly workshop material 20%
Presentation 10%
*Business case 30% (including Eportfolio criterion)
*Presentation 10%
Exam 40%

Assessment tasks are stand-alone and each assessment uses Criterion Referenced Assessment (CRA) in line with the University's Assessment policy [10].

The design of the CRA rubric for the Business Case group assessment task focused on the students' ability to develop and present a business case based on rigorous research. The second criterion "Exploration of PebblePad" was devoted to the students demonstrating their participation in the group and weighted 20%. The CRAs for the Business Case are presented in Table 3.

Table 3. Extract of CRA for the "Business Case" group assignment

CRITERIA	HD (High Distinction)
Evidence of research undertaken by the group 20%	Demonstrates significant evidence of deep and broad research undertaken by the group while formulating their business case
Exploration of Pebblepad 20%	Created an extensive range of assets that were integrated in a webfolio to demonstrate contribution to the team learning process and growth in personal knowledge
Description of tangible and intangible benefits 20%	Clearly identifies the scope of the technology being used and justifies and evidenced the tangible and intangible benefits the organisation has gained.
Business Case 30%	The Business Case is presented in a logical, coherent manner with relevant evidence supporting strategic claims and interpretations while making recommendations
Presentation of findings 10%	Exceptionally high standard of presentation associated with the findings. Exceeds current business practice.

The ePortfolio and the linked CRA provided the academic responsible for marking with a mechanism to individualise the group mark. When marking the Business Case assessment task, four of the five criteria were graded and then each of the individual ePortfolios was reviewed. Individual grades were applied for the criterion based on the evidence presented.

3   ASSESSMENT DESIGN – BENEFITS

There are clear benefits from using ePortfolios in assessment tasks as supporting evidence for group work. From the perspective of the academic the ePortfolios provide substantive evidence of individual contribution to group work both a graduate and undergraduate level on which to base marking. For the postgraduate unit the ePortfolio assessment was accepted as a reasonable task; this was not the case for students enrolled in the undergraduate unit. The student evaluation comments indicate that the explanation for different cohort attitudes may lie in the relative weighting of an ePortfolio assessment task. The postgraduate ePortfolio was worth 20% of total mark whereas the undergraduate ePortfolio task was worth a possible 6 marks, prompting comments on the impost of having to learn PebblePad.

3.1   Staff perspective

The aims for the postgraduate units were to address the particular problems of international students engaging and participating particularly in collaborative learning contexts such as group work. The use of ICT was integrated with the assessment design to support group work and to more adequately assess individual contributions. Technologies such as PebblePad support students to develop critical thinking and reflective skills. The technologies also support the instructors to monitor student progress and provide feedback as well as to assure students that individual contributions to group work were visible.

The inclusion of the individual ePortfolio assessment criterion in the group work assessment task for the undergraduate unit provided the unit coordinator with evidence of students' participation in their groups. In the past, a situation where a student group complained that a group member had minimal or no contribution, would have resulted in a number of interviews and then a subjective decision relating to the level, if any, of the student participation. The ePortfolio, as a component of a CRA rubric, provides substantive evidence of quantity and quality of individual participation on which to base decisions about individualising a group mark. In 2011 delivery one student received a zero mark for the group task; other students received reduced marks based on minimal contribution.

3.2 Student Cohort Perspectives

ePortfolio was a substantial and integrated component of the assessment for the postgraduate units and students were given structured introduction to the PebblePad technology. The first ePortfolio assessment task was framed as using PebblePad as a learning tool with which to structure and make sense of the theoretical content delivered in each unit. Students were then well positioned to create the second ePortfolio assessment task, which was framed as a tool to provide evidence of their individual contribution to the group assessment.

Critical analysis and self-reflection on individual and group work is often a particular issue for international students. Culturally the students have difficulty with the concept of reflecting on their own and group behaviour. Despite some initial struggles, and with support, postgraduate students managed to successfully learn how to use the PebblePad software and create a number of assets to record and analyse their individual work in a collaborative context. Overall postgraduate students accepted the inclusion of an ePortfolio as a substantial assessment task.

> *The PebblePad tool allows student to review their study in a good timeframe and then gain a better understanding of the subject matter.* [postgraduate student comment, SETL 2010]

In contrast, the feedback from students enrolled in the undergraduate unit was not positive. The assessment design for these students incorporated an individual ePortfolio task as an individual component of a group task. The individual ePortfolio was assessed as a criterion in a rubric for a group assessment task.

This design achieved the desired outcome from a teaching perspective: an evidence-base for differentiating individual student marks based on contribution to group assessed work. However, while this outcome was also satisfactory from the perspective of students, the feedback also indicated very strongly that students thought that having to learn to use an additional piece of software (PebblePad) outside of the Universities MyLO learning management system was not justified.

Even though students were not asked specifically in the formal Student Evaluation of Teaching and Learning (SETL) to comment on the concept of an ePortfolio assessment task the student comments included negative reactions to the inclusion of PebblePad in the group assessment task. Qualitative comments highlighted that students thought the time and effort required to learn PebblePad was too great.

> *PebblePad was absolutely terrible. It did not aid my learning experience in any way, apart from causing a lot of annoyance.* [undergraduate student comment, SETL 2011]

Student comments prompted the authors to decide to explore the effects of having to learn a new technology on student learning, particularly for low stakes assessment. We will investigate if the perceived cognitive load of learning a new elearning technology will be reduced (and student acceptance increased) if the ePortfolio function is embedded in the LMS, with the same look and feel of other functions (e.g. discussion boards) instead of accessed via a link to a completely different software platform.

4 PROJECT

In 2012, UTAS will implement a new LMS, Desire to Learn (D2L), starting with a small number of units coordinated by volunteer academics. Academics participating in the first phase of the project implementation will have the option to adopt the differentiated group assessment by incorporating individual student ePortfolios as one of the assessable criteria for group work. This will be achieved by utilising the D2L ePortfolio module integrated in the new LMS. Thus, there is an opportunity to engage in coordinated data collection and analysis across a number of pilot units to investigate student perceptions of a unit assessment task that does not require a separate access point and with look and feel consistent with the rest of the LMS.

The authors will trial the D2L ePortfolio module within the LMS. They will recruit unit coordinators as participants to incorporate individual student ePortfolios as one of the assessable criteria for group work. The unit coordinators using group assessment who nominate to be included in the first implementation phase of LMS are very motivated to engage and therefore more likely to incorporate innovation into their units.

Learning resources and guidelines will be developed that: 1) articulate the rationale and evidence base for including an ePortfolio task as a criterion in assessable group work; 2) make

recommendations for a sustainable approach to teaching students the technical aspects of ePortfolios and 3) provide pedagogical support for academics using criterion referenced assessment (CRA) design. As the project is focused on assessing individual ePortfolios as a single criterion within a CRA rubric for a group assessment piece, this support will take the form of a decision matrix for how the weighting of the ePortfolio criterion will be affected by factors the project identifies as relevant to assessing a group work task.

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