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Using learning portfolios to develop generic skills with on-line adult students

Cristina Poyatos Matas and Cameron Allan
Griffith University

In recent years, educators have begun to use learning portfolios as a means of evaluating student learning in higher education. Research indicates that learning portfolios can help students understand better the learning process as well as enhancing learning outcomes. They promote reflection on the learning experience and encourage students to think critically and make judgments about their own learning.

The aim of this paper is to explore how short-answer portfolios can support the development of generic skills. We focus on generic skill because one of the central aims of university teaching is to develop the generic capabilities of graduates. These generic attributes represent the qualities, skills and understandings a university community anticipates its students should acquire at university and display as a graduate professional and citizen. This paper reports the findings of a study of learning portfolios and generic skill development of industrial relations students studying on-line at a remote location. The students completed a short-answer learning portfolio as part of their learning experience. Data were gathered about the performance and views of these students from interviews, a survey, analysis of student work and email correspondence with their teacher. Our research indicates that learning portfolios are an effective way of developing generic skills, although they are very labour intensive from the teacher's perspective.

Introduction

It is now recognised that one of the key aims of universities is to develop the generic capabilities of graduates. These generic attributes represent the qualities, skills and understandings a university community anticipates its students should acquire at university and display as a graduate professional and citizen (Higher Education Council 1992). Clanchy and Ballard (1995) argued that there are higher order skills (logical reasoning, critical thinking and so on) and lower order generic skills (computing and word processing). Most universities have now developed statements of the generic skills of their graduates (Bowden, Hart, King, Trigwell & Watts 2001; Milne 1996). At Griffith, these attributes are articulated in the 'The Griffith Graduate', and are listed later in Table 2 (Bell, Crebert, Patrick, Bates & Cragnolini 2003).

Many authors have explored different ways of helping learners to develop generic skills (Milne 1996; Bennet, Dunne & Carré 1999). Recently, De la Harpe, Radloff and Wyber (2000: 234) have argued that learning portfolios can be a good way to develop generic skills. Learning portfolios involve the student in active, responsible and reflective learning through documentation of course work and reflections on personal growth (Gordon 1994; Paulson, Paulson & Meyer 1991; Thorogood, Mason, de la Harpe & Radloff 1999).

In recent years, educators have begun to use learning portfolios as a means of evaluating student learning in higher education (Beck & Weiland 2001: 60). Research indicates that they can help students understand better the learning process as well as enhancing learning outcomes (Chang 2001). Learning portfolios encourage learners' reflection on the learning experience that encourages them to think critically (Chen, Liu, Ou & Lin 2000) and make judgments about their own learning (Wright, Knight & Pomerleau 1999).

In addition, the use of learning portfolios provides the teacher with an opportunity to assess students on what they believe they have learnt and what they have actually learnt, while at the same time ensuring that accountability and standards are met. Moreover, the teacher can obtain feedback on students' perceptions of their learning and professional development, and information about the unit/course in terms of the opportunities for learning. Finally, the teacher can reflect on the extent to which the teaching goals have been met (Thorogood *et al.* 1999: 2).

The study

This study investigates how the use of student learning portfolios could support the development of generic skills for on-line industrial relations students. The learning portfolio was embedded in a course, titled *Australian Labour Relations* (ALR). This pre-existing, second-year industrial relations course at Griffith University was offered for the first time on-line in 2003. This course acquaints students with the main actors and institutional features of industrial relations in Australia over a 13-week semester.

The impetus for the provision of on-line education came from a local mining trade union, the Queensland Mining Division of the Construction, Forestry, Mining and Energy Union (CFMEU). The union had been looking for a way of providing industrial relations education, not just training, to their adult union members,

delegates and employees who were dispersed throughout the state at underground and open-cut mines and at regional offices. They wanted to improve the effectiveness of personnel by providing them with university-level training in industrial relations. In so doing, the union aimed to ensure that their people had a university standard of industrial relations education as would be possessed by human resource managers working for the mine owners. The union also sought to develop the expertise of their personnel to enable them to undertake higher-level duties within the union.

It was assumed by the teachers that most of these adult, on-line students would have little experience with information and communications technology. Accordingly, the learning materials developed were primarily print-based resources. A pre-existing study guide, which provided a detailed overview of each topic, was updated and made suitable for on-line students. A reading kit, to supplement the textbook, was compiled. A CD-Rom was developed which included an introductory verbal message from the convenor as well as guides on how to write an essay, how to reference correctly and how to write in plain English.

The assessment for the on-campus students consisted of two essays and an exam. It was felt that this assessment format should not be changed dramatically for the on-line students so as to ensure some consistency between on-campus and off-campus offerings. Nevertheless, it was recognised that many of the remote students from the CFMEU would be unable to write a satisfactory academic essay without considerable help and support. It was deemed that setting students an academic essay for their first assessment item would have been beyond many of them, so instead, it was decided to break down the writing task into three smaller progressive exercises. Thus a short-answer learning portfolio was introduced for on-line students in place of the first essay for on-campus students. The aim was to help them gradually to develop and acquire writing skills and other generic skills.

The learning portfolio

The learning portfolio consisted of four items: three short-answer activities and a reflective exercise at the end. Each student had different learning responsibilities, and acted as author and peer editor of the different replies to the short-answer questions included in the different parts of the learning portfolio, as can be seen in Table 1.

Table 1: On-line student roles and responsibilities while developing different parts of the learning portfolio

As author	As peer editor
• Write a short-answer activity (version one) • Send short-answer essay to a peer and the teacher to be reviewed • Receive editorial comments from an on-line peer and the teacher • Review own work to create version two, based on feedback received from study partner and teacher, as well as insights gained from providing feedback to on-line peer • Write reflections on learning experience	• Receive and read short-answer essay from on-line peer • Provide constructive written feedback to peer and a copy to the teacher

Students did not provide feedback to their study partner in the first of the short-answer exercises. This was decided because as they had not received any feedback themselves, it was believed that they would not be able to offer effective and constructive feedback to other students.

A central feature of the design of the learning portfolio was the role of feedback, reflection and revision. The provision of timely and effective formative feedback to students gave them an opportunity to reflect and revise their essay content and format in a short time cycle.

The completion of the three short-answer essays in quick succession enabled them to focus and practise the key elements of effective written communication, analysis and critical evaluation among other generic skills. The participation of students in providing feedback to their peer also gave them a chance to observe the work of other students, to compare it with their own work and think critically about the assessment criteria.

As mentioned previously, the short-answer portfolio was designed to support the development of on-line students' generic skills as outlined in Table 2. The first column shows the key assignment tasks such as drafting essay, providing feedback and revising own work. The second column outlines the detailed generic skills associated with each of these tasks. These are the key generic skills the assessment was designed to develop. The final column links the tasks and generic skills to the broad attributes that Griffith University believes that all its graduates should possess.

Table 2: Generic skills deployment and acquisition for short-answer portfolio

Assignment task	Generic skill deployment	Griffith Graduate Skills
1. Draft short-answer Study reading material	Analyse, evaluate, conclude and understand	Analysis and critical evaluation
Write essay	Create and express	Written communication
2. Provide feedback to peer Study draft	Analyse	Analysis
Assess draft against criteria	Compare and evaluate	Critical evaluation
Provide feedback	Relate, show respect, advise and persuade	Group work skills, leadership, written communication
Consider implications for own work	Reflect, evaluate and apply	Independent lifelong learning
3. Revise own draft Reflect on feedback	Evaluate and conclude	Critical evaluation
Revise draft	Modify	Written communication
4. Reflective exercise	Reflect, evaluate and demonstrate application	Independent lifelong learning

Each short-answer essay contained in the learning portfolio was designed to be increasingly more complex. As it can be seen in Table 3, students were expected to address eight criteria in the first short-answer essay, twelve criteria in the second and fifteen in the third one. The full list of these assessment criteria was identical to the criteria used for the main essay given to the on-campus students. Therefore, the learning portfolio gradually equips on-line students with the generic skills needed to write acceptable undergraduate academic essays.

Table 3: Assessment criteria for short-answer question one, two and three

	Short-answer one	Short-answer two	Short-answer three
Argument and content:			
Answers question/s and responds to all parts of question	✓	✓	✓
Displays knowledge of issues	✓	✓	✓
Definition of key terms and concepts		✓	✓
Depth of research			
Argument develops logically		✓	✓
Evidence of analytical and critical perspectives (more than description)			✓
Use of relevant examples	✓	✓	✓
Structure:			
Correct structure of introduction, body and conclusion			✓
Clear paragraph structure	✓	✓	✓
Clear linkages between paragraphs and sections		✓	✓
Technical issues:			
Complete and correct reference list			✓
Consistent and appropriate use of citations	✓	✓	✓
Clear and accurate English expression (spelling, grammar, syntax)	✓	✓	✓
Correct word length (+ or - 10%)	✓	✓	✓
Avoids discriminatory language	✓	✓	✓
Avoids slang / cliches / colloquialisms	✓	✓	✓

Research methodology

The study used an evaluative case study as research methodology (Silverman 1993) and multiple sources of data to allow triangulation (Denzin 1997). Quantitative and qualitative data were collected to evaluate the effect that the use of learning portfolios with on-line students may have had on the development of their generic skills. Data were collected from the teacher and from the on-line students.

Multiple research instruments were used. Firstly, two one-hour interviews were conducted with the teacher and recorded in the middle and towards the end of the semester. Secondly, examples of student work during the semester were examined, and the student grades for each assessable activity were compiled. These data gave information on the relative and progressive performance of each individual student across the semester. Thirdly, students were surveyed at the end of semester on their experiences in the course. Aside from some demographic data, students were asked to evaluate their generic skills at the start and end of the semester and other matters.

To gain comparative insight into the relative performance and experiences of the on-line students versus a comparable group of on-campus students, we also gathered data from a cohort of on-campus students studying in the same course. Unlike the on-line students, the on-campus students attended lectures and tutorials and completed an essay as their first assessment item rather than the learning portfolio. The on-campus students were in their second year of university, whereas the majority of on-line students were commencing higher education for the first time. As part of our data collection strategy, we surveyed both the on-campus and the on-line students. We also compiled and compared student performance for all assessment items for both groups.

Some 36 of the 44 on-campus students completed a survey giving a response rate of 82 percent. Surveys were distributed to students in their final class and this direct and personal approach helped account for the high response rate. However, the response rate for on-line students was much lower at 52 percent. Only 11 students out of a group of 21 students completed the survey. The low response rate is most probably due to their busy work lives and heavy involvement in family and community activities.

Results and discussion

There were some major demographic differences between the on-line and the on-campus students based on the survey results. A total of 75 per cent of on-campus respondents were females, whereas 100 per cent of the on-line respondents were males.[1] The age profile of the two groups is shown in Table 4. On-campus students had a much younger age profile compared with their off-campus counterparts. Some two-thirds of on-campus respondents were aged 19 to 25 years, whereas almost one-half of the on-line respondents were aged over 45 years. In terms of education, the on-campus students were much more likely to be educated to Year 12 or have an existing bachelor's degree, whereas the on-line students had lower levels of secondary education and more trade and TAFE qualifications.

[1] There were two females in the course who did not complete the survey.

Table 4: Demographic information of on-campus and on-line respondents

	On-campus (%)	On-line (%)
Gender:		
Female	75	0
Male	25	100
Age:		
19–25	67	9
26–35	19	18
36–45	11	27
46–55	3	46
Education:		
Year 10	0	18
Year 11	0	9
Year 12	43	18
Trade/TAFE	17	46
Diploma	11	9
Undergraduate	28	0

Given the mature aged profile and the lower levels of educational attainment of the on-line students, it is interesting to examine their level of academic performance in the different parts of the short-answer learning portfolio. An indication of the overall improvement in the student learning performance for the on-line students can be gleaned from Table 5. This table shows how the on-line students performed in each of the three short-answer essays before they undertook the essay. The data show that in the first short-answer activity, a majority of on-line students failed. By the second short-answer activity, roughly a quarter of students had shifted from a fail to a pass so that the failure rate had declined to 35 percent. By the third activity, none of the students had failed. Student performance continued to improve with the essay, where some 55 percent of students achieved a credit or better grade compared with only 15 percent in the first short-answer activity. These data indicate that students showed a progressive and marked improvement in their performance in each successive assessment item.

Table 5: Portfolio short-answer assignment results for on-line students (n =20)

	Short-answer one (%)	Short-answer two (%)	Short-answer three (%)	Essay (%)
High distinction	5	5	5	10
Distinction	0	0	5	25
Credit	10	10	45	20
Pass	25	50	45	40
Fail	60	35	0	5
Total	100	100	100	100

The improved performance arose primarily because students were provided with regular feedback and given the opportunity to improve their work. Students also gained a good understanding of academic expectations by doing the same exercise repeatedly. Undertaking a number of small repetitive assessment items in the learning portfolio – rather than a single essay – reduced student anxiety and gave them time to rehearse and refine the many skills required to write essays. Students also gained a deeper understanding of the assessment criteria by providing feedback to their peers. They were made to address and confront the assessment criteria in detail which had beneficial effects on their work.

In terms of the usefulness of the learning activities, students found the process of giving feedback a useful learning experience. However, they did not particularly like receiving feedback from their peers. In most cases, students stated that they had little confidence in the advice provided to them by their feedback partner. Students tended to view the feedback of the teacher as authoritative and the advice of their feedback partners as of minor importance. Many students found the process of giving feedback was a valuable learning experience as it made them focus consciously on the assessment criteria. As a student commented: 'Doing feedback was also a great help to me as it made me think more of the issues being discussed' (SI3-p.4).

While the on-line students did improve their performance, how does this compare with the performance of the on-campus students? Table 6 shows a comparison of the overall grades of the on-campus and the on-line students for the major essay, exam and final grade.

Table 6: Assignment results for on-line (n = 20) and on-campus (n = 44) students

	Essay (%)		**Exam (%)**		**Total (%)**	
	On-campus	On-line	On-campus	On-line	On-campus	On-line
High distinction	14	10	5	15	9	10
Distinction	18	25	25	10	18	10
Credit	32	20	25	45	32	50
Pass	30	40	43	20	36	25
Fail	7	5	2	10	5	5
Mean	68	67	67	69	67	68

The on-campus students performed slightly better at the combined high distinction / distinction end of the scale. The on-line students performed better at the credit level than did the internal students. Overall, there was a comparable level of performance between the two groups with the on-line students bunched more towards the middle of the grading scale. These results suggest that, after completing the short-answer learning portfolio, the on-line students were performing to a similar standard as the on-campus students. These results suggest that the learning portfolio was successful in raising the performance of these mature-aged students to an acceptable standard in a relatively short period of time.

But how did the students themselves rate their own performance? As part of our survey, we asked students to evaluate their generic skills at the beginning and at the end of the course. We asked them to rate their abilities, with a score of 5 denoting 'very good' and 1 'very poor'. Table 7 displays the comparative data for the on-campus and the on-line students, and also shows the degree of change from the beginning to the end of the semester.

The on-campus students rated their abilities at the beginning of the semester considerably more highly than did the on-line students on all measures. The on-campus students rated themselves very much in the middle of the scale, except for information technology skills. The on-line students felt they were poorly equipped with generic skills in almost all areas. The difference between the two groups is to be expected, as the on-campus students were second year students and the majority of on-line group were attending university for the first time. The on-line group were clearly much less confident in their abilities than their on-campus counterparts.

However, at the end of the semester, the ratings of the on-line students was similar and, in some cases, slightly superior to the ratings of the on-campus students. As can be seen from the column displaying the 'change' results, the on-line students made considerable progress over the semester, whereas the on-campus students reported only minor improvements in their generic skills. These results support the earlier findings that the on-line students were able to match the performance of the on-campus student after having completed the learning portfolio.

Table 7: Students' assessments of their generic skills at the start and the end of semester (scale: 1 to 5)

	Skills	On-campus students			On-line students		
		At start	**At end**	**Change**	**At start**	**At end**	**Change**
Analysis	Analyse academic problems	3.2	3.6	**0.4**	2.2	3.5	**1.3**
	Break down essay questions into constituent parts	3.1	3.7	**0.6**	2.1	3.5	**1.4**
	Analyse reading material	3.3	3.8	**0.5**	2.8	3.9	**1.1**
Critical Evaluation	Identify and define key terms	3.5	3.7	**0.2**	2.5	3.7	**1.2**
	Evaluate evidence	3.2	3.5	**0.3**	2.6	3.7	**1.1**
	Compare ideas from different sources and draw conclusions	3.4	3.6	**0.2**	2.4	3.8	**1.4**
	Think critically	3.3	3.5	**0.2**	2.8	3.7	**0.9**
	Use constructive feedback from the teacher to improve my work	3.5	3.7	**0.2**	2.4	4.0	**1.6**
Written Communication	Express ideas in writing	3.2	3.6	**0.4**	2.1	3.6	**1.5**
	Be persuasive in an essay	3.1	3.5	**0.4**	2.3	3.5	**1.2**
	Structure an essay correctly	3.2	3.7	**0.5**	1.7	3.6	**1.9**
	Use evidence to substantiate a written argument	3.3	3.7	**0.4**	2.5	4.2	**1.7**
	Reference an essay correctly	3.5	3.8	**0.3**	1.2	4.0	**2.8**
Life-long Learning	Explicitly answer set question	3.3	3.6	**0.3**	2.5	3.8	**1.3**
	Develop a logical argument	3.1	3.5	**0.4**	2.4	3.6	**1.2**
	Capacity to work independently on written assignments	3.6	4.0	**0.4**	2.5	3.8	**1.3**
	Find resources to answer a question or problem	3.2	3.7	**0.5**	2.5	3.8	**1.3**
	Evaluate my own learning performance	3.2	3.5	**0.3**	2.5	3.5	**1.0**
Group Work Skills	Work collaboratively with others	3.5	3.7	**0.2**	3.0	3.3	**0.3**
	Provide constructive feedback to others to improve their work	3.5	3.6	**0.1**	2.3	3.5	**1.2**
Information technology	Locate information on the internet	3.5	3.7	**0.2**	2.5	4.1	**1.6**
	Use a word processor (like Word for Windows)	4.0	4.1	**0.1**	2.6	3.8	**0.8**
	Use an email program to communicate with others	4.1	4.2	**0.1**	3.4	3.8	**0.4**
	Send an attachment by email to others	4.0	4.2	**0.2**	3.1	4.1	**1.0**

The perspective of the teacher was recorded in two semi-structured interviews that explored the teacher's experience in the course and her evaluation of the impact of the learning portfolio on student learning. She commented on how the learning portfolio was used and where students were experiencing barriers to improvement and success. Detailed notes were taken during the interview and the tapes were transcribed for analysis.

The comments that the teacher made in the interviews support the findings of the student surveys. She noticed a remarkable improvement in the different generic skills of the on-line students. She related this improvement to the nature of the continuous and reflective work encouraged by the use of the learning portfolios, as she said in her first interview:

> These guys really get to try, and if they don't get it right, they get to fix it, and everybody's resubmission shows that, yes, they have looked at the feedback. They have taken these things into account ... and on average, I would say that they've leapt at least one grade, if not two (TI1-p.2).

She mentioned two main factors that helped many of the on-line adult learners to develop the different generic skills. The first was the amount of feedback that they received from the teacher and their peer during the learning process, and the second was having the opportunity to review and learn from the work of a peer. Furthermore, she thought that submitting the second version of their own work was a very good opportunity to improve their work, as she said in her second interview:

> The average for the first submission was 2.9 and that has gone up to about 3.9 for the second (TI2-p.2).

However, she mentioned that the process was time-consuming for the teacher due to the nature and amount of the feedback provided to the students, as it was going to be taken into consideration by them to create the second version of their work.

In addition, the on-line nature of the feedback also affected the time that the teacher invested into providing it. As she mentioned a couple of times in the first interview:

> Well, I'm very careful about how I word things, very careful ... because I know it may come back and bite me. It's much harder to use a computer and give people feedback. It is so much quicker and easier to just scribble all over things (TI1-pp.2–3).
>
> I'm just really careful about how I word things (TI1-p.10).

In the second interview, the teacher also expressed that the feedback provision process was taking a lot of time, as she reported:

> I don't know it's any easier – it's still hideously time-consuming (TI2-p.3).

Overall, giving student feedback on the different elements of the short-answer learning portfolio by computer rather than face to face seemed to put additional pressure on the teacher, who felt more vulnerable and liable. Therefore, she invested more time in the provision of student feedback.

Conclusions

This paper has reported an evaluative case study with on-line, mature-aged industrial relations students using learning portfolios to develop generic skills. The study used a number of research instruments to collect qualitative and quantitative data to document the experiences and views of the students and the teacher. This study contains some valuable lessons about assisting adult learners make the difficult transition to university.

The findings of the study indicate that the use of a short-answer learning portfolio as an assessment task can engage adult, first-year, on-line students in continuous learning. This can contribute positively to the development of their generic skills. Furthermore, the use of this process-focused assessment approach helped many of the participants to equal the performance of second year on-campus students.

This research indicates that learning portfolios can be used to support adult learners new to the university environment. Breaking down complex learning activities into smaller learning tasks makes the learning objectives more achievable. Involving students in the feedback process helps them to understand better the assessment criteria and standards. However, more research is needed to find out how learning portfolios can be used to support adult learning, but without having a major impact on teachers' workloads.

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About the authors

Cristina Poyatos Matas *is a lecturer in Spanish and Latin American Studies in the School of Languages and Linguistics. Her research interests include the use of teaching and learning portfolios in higher education, classroom assessment techniques, and Hispanic communities in Queensland.*

Cameron Allan *is a Senior Lecturer in the School of Industrial Relations at Griffith University, Brisbane. His research interests include teaching and learning in employment relations, working time and non-standard employment.*

Contact details

School of Languages and Linguistics, Griffith University, Nathan Campus, Brisbane, Queensland 4111
Tel: +61 7 3875 7264 *Fax: +61 7 3875 7730*
Email: c.matas@griffith.edu.au

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~~Communication technologies and knowledge building in agriculture~~

~~Robin Segrave~~
~~Department of Primary Industries, Victoria~~

~~*The concept of knowledge building communities has not traditionally been associated with agricultural extension, but is one which has the potential to increase the rate of adoption of best management practices by the industry. A potentially important mechanism to facilitate knowledge building is information and communication technology (ICT); however, very little research has been conducted on how effective it is in facilitating agricultural extension.*~~

~~*In this study, the potential for the use of ICT to facilitate knowledge building communities in agriculture was investigated in the dairy industry. Drawing on qualitative analysis using a case study, this research showed that ICT can enhance the gaining of technical knowledge (an important goal of extension); however, it was less successful in increasing collaborative learning. It was found that hierarchies within the dairy learning group were maintained despite*~~