

## ***With age and experience comes an appreciation of the value of feedback for learning***

Georgina Fyfe<sup>1</sup>, Sue Fyfe<sup>1</sup>, Julie Hill<sup>2</sup>, Jan Meyer<sup>2</sup>, Kayty Plastow<sup>2</sup>, Kathy Sanders<sup>2</sup> and Mel Ziman<sup>3</sup>

<sup>1</sup>Curtin University of Technology, Perth, Western Australia; <sup>2</sup>University of Western Australia, Perth, Western Australia; <sup>3</sup>Edith Cowan University, Perth, Western Australia

*Feedback is recognised as important to learning but research shows that most university students are dissatisfied with the feedback they receive. Large classes challenge teachers to provide useful and timely feedback to students on their assessment tasks, and on-line technologies offer possible strategies. This paper reports on a study to explore perceptions of feedback with a large and diverse group of undergraduate students studying Human Biology in three Western Australian universities. Results showed that age and experience of learning influenced the way in which students valued and used the feedback they received. Students with previous experience of learning were more likely to see feedback as being useful in more ways to their learning. Younger students saw fewer benefits of feedback. Older students with previous experience of learning saw the value the feedback they received for more aspects of their learning, and used it in more constructive ways to improve learning outcomes. This study suggests that students should be given more opportunities at an earlier stage of their studies to learn to recognise, experience and reflect on feedback, and build skills in using feedback constructively. The authors of this paper propose strategies to implement this support in large first year classes using on-line assessment.*

### **Introduction**

Formative and summative assessment tasks provide both learner and teacher with feedback on the progress of student learning. While definitions may vary on what constitutes formative assessment and feedback, there is acceptance in the literature that formative assessment provides students with information about their performance (Weaver, 2006; Yorke, 2003), that feedback provides information about performance in comparison to a reference level (Ramaprasad, 1983) and can be used to improve performance, clarify understanding and enhance learning (Ford & Chen, 2001). To achieve these ends however, it must be meaningful, understood and correctly acted upon (Ford & Chen, 2001). How meaningful feedback is to a student will depend at least in part upon what they are expecting of the feedback. The purpose of this paper is to explore first year Human Biology students' perceptions of feedback in the context of computer-based assessment, the effect that age and experience have on those perceptions, and the way they value and use on-line feedback. The study upon which it is based surveyed over 1000 students from three Western Australian universities: the University of Western Australia (UWA), Curtin University of Technology (Curtin) and Edith Cowan University (ECU).

### **Literature review**

The significant challenges of teaching and assessing large classes of undergraduate students are acknowledged in "Assessing Learning in Australian Universities" (James, McInnis, & Devlin, 2002). The authors argue that large classes limit the quantity and quality of feedback that can be provided to students. Between 1984 and 2004 the average staff student ratio in Australian universities rose from 1:13 to 1:21 (DEST, 2005) and, in many Australian universities, the move to consolidate discipline areas resulted in large first year enrolments for core units such as Biology (Peat & Franklin, 2002) and Human Biology (Fyfe & Fyfe, 1999). In 2006 the combined student enrolment of first semester, first year Human Biology units at UWA, Curtin and ECU was almost 2000 students.

Assessment strategies are not only constrained by high student numbers, but are also complicated by the diversity of students found in large undergraduate classes. Students may have differing background knowledge, skills, life experiences, expectations, academic sophistication and intellectual maturity. The approaches to assessment tasks of different students, their ability to reflect on their performance, and the feedback they receive may vary considerably.

A report of student and teacher experiences in higher education in Australia in 1994 compared with 2004 showed that students in 2004 were more likely than the 1994 cohort to agree that their teachers were enthusiastic, good at explaining things, approachable, took an interest in their progress, and gave useful feedback (Krause, Hartley, James, & McInnis, 2005). Nevertheless, two thirds of the students in the 2004 cohort were still dissatisfied with the feedback they received on their progress. A project undertaken jointly by the Open University and Sheffield Hallam University in the UK, where universities are faced with similar funding issues to those of Australian universities, and the pressures these place on staff, found that many students were dissatisfied with the quality, quantity and timing of the feedback they received (Glover, 2004). That study suggested that some of the dissatisfaction arose from a mismatch between teacher and student perceptions of the nature of feedback. Only written feedback was regarded by the students as feedback and they often did not attend to verbal feedback because it was not recognized as feedback (Glover, 2004). Lea and Street (Lea & Street, 2000) also found mismatches between students' interpretations of feedback comments and tutor's intentions.

Peat and Franklin's 2002 study of Australian undergraduate Biology students failed to show that richer formative assessment feedback improved student learning in the short term. However, in revisiting the data they found that while students who used extra resources for feedback in their first semester did not gain higher marks than other students, the experience had a positive influence on their results in second semester. Even students who had not used the resources in semester one, but did so in semester two, showed a significant improvement in their learning (Peat, Franklin, Devlin, & Charles, 2005). Their findings support Ramsden's earlier suggestion that previous experience influences a student's approach to learning and use of feedback (Ramsden, 1992). Similarly, other researchers have trialed provision of extensive feedback on assessment tasks for students working in an on-line environment (Poyatos-Matas & Allen, 2005). These mostly mature-aged experienced learners were provided with exemplars of essay answers and general class feedback. It was the students' perception that general class feedback allowed them access to a greater breadth of feedback, and provided opportunities for comparison and reflection. Krause et al (2005) found that while mature age students might be new to study, they generally have a clear purpose motivating their study, and are more likely to seek assistance from tutors. Thus, there is evidence that age and/or experience of learning influence the value of feedback in learning.

The role of online assessment in easing the burden of managing large volumes of marking and assessment-related administration is accepted (James, McInnis & Devlin, 2002) along with the potential of on-line assessment to allow for increasing flexibility of delivery, diversification of assessment tasks and broadening of the range of skills assessed. It also has the capacity to provide feedback. Feedback delivered on-line, however, has a special requirement, in the absence of face-to-face opportunities for clarification and reinforcement, to be tailored to the needs and receptiveness of the students.

The aim of the study was to explore differences in students' perception of feedback, effect of various demographic characteristics, such as age and prior experience of learning, in order to provide effective feedback for online assessment tasks.

## **Methods**

In order to identify feedback issues important to students we conducted 14 short (20 minute) focus group interviews of students from the units (one quarter of a full-time semester load) to be surveyed. We investigated students' general experience of feedback at school and/or university and on their views of online assessment – focussing particularly on how they felt about the process of participation and seeking clarification of what they were looking for in the way of feedback.

The questions posed were:

- What do students think feedback is?
- What do students feel they need in the way of feedback?
- What do students think of as good or helpful feedback?

Themes identified from field notes taken in the focus group matched closely those used in the Sheffield Hallam University Questionnaire (Glover 2004). With a number of modifications to reflect the focus on on-line assessment in this study, a version of the Glover questionnaire was trialed on a group of 35 final year undergraduate students at UWA. The results of this trial indicated that the complexity of the question style and spread of questions covering experience and usefulness of written, oral and on-line feedback meant that it was unlikely that the first year students would be able to complete the full questionnaire in the 15 minutes available in class. We therefore chose to focus on the experience of on-line feedback and modified relevant parts of the Glover questionnaire to make it shorter and the questions both clearer and quicker to answer.

The sections in the final questionnaire were

1. General demographics:
    - a. age,
    - b. sex,
    - c. experience of study at university,
    - d. mode of attendance,
    - e. language spoken at home,
    - f. disability and
    - g. an estimation of anticipated mark in the unit.
  2. Feedback in relation to on-line assessment –
    - a. level of experience,
    - b. the extent (“not at all”, “some”, “a lot”) to which the feedback was useful in relation to each of 14 different aspects of learning
- The 14 aspects of learning encompassed understanding why the grade or mark had been awarded, how well the student was going, where they had gone wrong, how to improve, how to help prepare for examinations and their motivation for learning. In addition specific subject knowledge, course content and generic skill improvement such as development of intellectual, learning and academic writing skills were included.
3. Past experience of general feedback included questions on
    - a. satisfaction with timeliness,
    - b. satisfaction with amount of feedback, and
    - c. how feedback was used by the student.
  4. Anticipated feedback. We asked respondents what forms of written, verbal and on-line styles of feedback they expected to receive in the unit.

We also included open-ended questions on the type of feedback found most and least useful. The questionnaire was administered to the students in class time by members of the project team.

## **Analysis**

Notes from the focus group sessions were text coded and analysed using N Vivo 7.0 (QRS International, 2006) text management software. The survey items were analysed using the statistical package GenStat 8.1 (2006). Differences between age, feedback and tertiary experience groups were assessed by one and two-way ANOVAs. Responses from students which were the same all the way down the column of questions relating to one type of feedback, including the question at the top concerning level of experience with that type of feedback, were excluded from the analysis, as

were those from students who failed to indicate their status with respect to the grouping in question. Age was taken into account as a covariate in analyses of the effects of levels of previous post-secondary experience of feedback. Chi-square tests were used to assess differences in frequencies and Kendall's Co-efficient of Concordance used to evaluate differences between groups in rankings of the value of different types of feedback.

## Results

Questionnaire returns were obtained from 1099 students representing just over 50% of the total enrolment in Human Biology first semester units at the three institutions. The demographic profiles of the students surveyed are set out in Tables 1 and 2. It is worth noting that the older (over-21 age group) students were more likely to come from ECU ( $x = 23.97$ ,  $SD 7.25$ ), to be male (42%), be in paid employment for more than 20 hours per week, studying part-time and to have had prior post-secondary experience. While most students expected to pass Human Biology in the first year, almost 20% of the over-21 year group expected low (Fail/Pass) grades compared with 10% of the 19-21 year group and 7% of the 16-18 year group. Younger students anticipated higher grades (credit/distinction) in the unit than older students ( $p < 0.001$ ).

	UWA	Curtin University	ECU	Overall
n	421	564	114	1099
Age means yrs	18.25	18.88	23.97	19.85
SD	SD 1.94	SD 2.87	SD 7.25	SD 3.68
(n)	(418)	(563)	(108)	(1089)
Age group expressed as a percentage of sample in each institution				
16-18	310 (74.2%)	356 (63.2%)	30 (27.8%)	696
19-21	90 (21.5%)	154 (27.4%)	29 (26.8%)	273
>21	18 (4.3%)	53 (9.4%)	49 (45.4%)	120
Gender expressed as a percentage of sample in each institution				
Male	167 (40%)	158 (28%)	48 (42%)	373 (34%)
Female	254 (60%)	406 (72%)	66 (58%)	726 (66%)

*Table 1. Demographic information from the student survey sample*

There was a relationship between age and the amount of previous experience of feedback reported by the students we surveyed. The youngest group (16-18 year olds) reported substantial experience of significantly (ANOVA  $p < 0.001$ ) fewer types of feedback than older students. Students with previous post-secondary education also reported experience with more types of feedback ( $p = 0.005$ ).

Overall, we found students who reported having more experience with feedback were more likely to be satisfied with both the amount ( $p < 0.001$ ) and timeliness ( $p < 0.001$ ) of the feedback they received. None of the inexperienced learners felt that they "always" received enough feedback and nearly half (41%) believed that they "hardly ever" received enough feedback. In contrast 47% of experienced students reported that they "always or mostly" received enough feedback and only 7% reported "hardly ever" receiving enough feedback. Age in itself did not affect satisfaction with timeliness of feedback ( $p = 0.79$ ). More experienced students also put the feedback they receive to more constructive uses such as reviewing their work, revising and preparing for the next assessment ( $p = 0.048$ ). The enrolment mode and levels of post-secondary experience of the students is shown in Table 2.

Enrolment mode % of enrolment mode, % of age group			
Mean age (yrs)	18.95 SD	28.67 SD	P <
Age group	Full time enrolment (%)	Part time enrolment (%)	
16-18	695 (65.2%)	1 (4.8%)	P < 0.001
19-21	268 (25.1%)	4 (19%)	

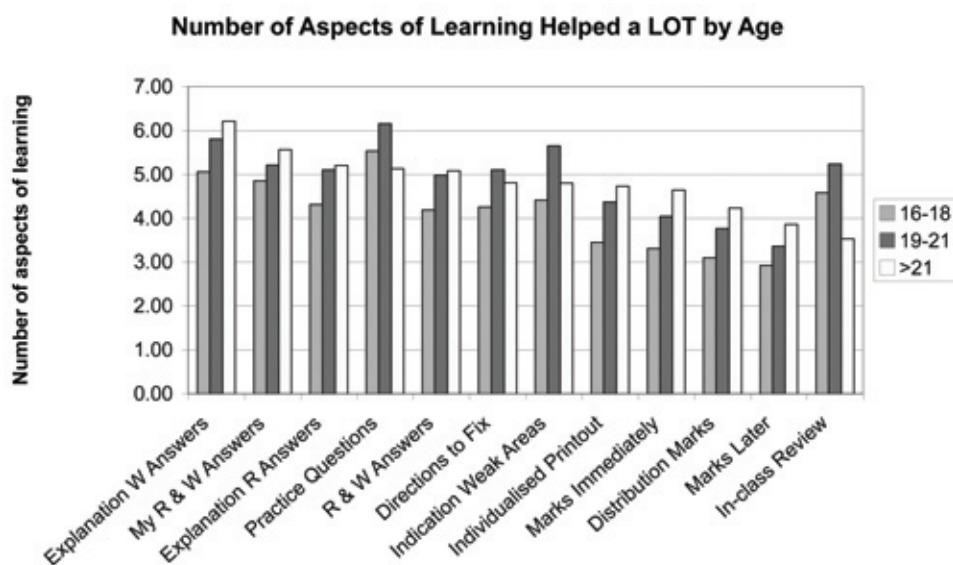
*(table continued on next page)*

>21	103 (9.7%)	16 (76.2%)	
Previous post-secondary experience			
Age group	Yes	No	P <0.001
16-18	42 (6.1%)	647 (93.9%)	
19-21	90 (34%)	175 (66%)	
>21	63 (55.3%)	51 (44.7%)	

*Table 2. Age distribution, enrolment type and levels of post-secondary experience of the overall student survey sample*

The youngest group reported less experience of different types of feedback ( $p < 0.001$ ) while those with some previous post-secondary education reported more experience with feedback ( $p = 0.005$ ). Age did not influence satisfaction about timeliness of feedback ( $p = 0.79$ ). Age group did not significantly affect ranking of usefulness of feedback types but there were some trends apparent. Overall, students rated having practice questions, explanation of wrong answers, explanation of right answers, specific feedback on their own right and wrong answers and reports of their own areas of weakness as being the feedback they rated most highly in helping them learn. They rated in-class review of the assessment as less useful but still of benefit to their learning. They felt that knowing where they fell in relation to the rest of the class and just getting marks immediately or later were the least helpful forms of feedback. The over 21 year olds rated in-class review as least helpful to their learning.

Our analysis allowed us to look at both the effect of age and self-reported experience of feedback on the perception of its value. Generally, “some” or “a lot” of experience of feedback was associated with post secondary experience ( $p = 0.005$ ) with a perception that feedback helped more areas of learning. Increased experience of feedback results in a greater value placed on its learning usefulness. More experienced students reported that more aspects of learning could be helped “a lot” by more types of feedback ( $p < 0.001$ ) and were less likely to dismiss any type of feedback as being of “no use” ( $p < 0.001$ ), irrespective of age. In contrast, the youngest and most inexperienced students tended to see less value and actively say that there is “no value” in specific feedback types ( $p = < 0.014$ ). Students with prior post-secondary experience considered feedback to be “a lot” of help to more aspects of their learning and were less likely to dismiss feedback as being of “no help”. A summary of the typical interactions between age and experience on ratings on the value of feedback, in relation to one aspect of feedback (receiving marks some time later), is illustrated in Figure 1.



*Figure 1. Ranking of age with aspects of learning helped a lot by feedback*

## **Discussion**

The findings from this study suggest that age and experience influence the value students place on feedback, especially when that previous experience is of learning and feedback. Not a single student with minimal experience said that they “always get enough feedback”, and nearly half said they “hardly ever get enough feedback”. In this our findings agree with the work of Orsmond, Merry and Reiling (2005) in relation to third-year students in the UK, and with first year Biology students in Australia (Peat et al., 2005). It would appear that students need to experience feedback before they know how to use it, and that younger, less experienced learners may not recognise feedback when it is offered. Older more experienced students were more likely to see positive applications of more types of feedback and to use the feedback to improve their learning. This may be because, in experiencing feedback, students develop skills in reflection which allow them to think about why they were right or wrong, and what strategies they can employ to minimise similar mistakes in the future. They may also develop an ability to transfer the feedback they receive to different contexts.

Learners who rate themselves as more experienced at receiving feedback possibly open themselves to feedback opportunities not even perceived as feedback by less experienced learners. Perhaps age and experience confer an ability to gain from criticism and overcome feelings of resentment and hurt. Our observation that the type of feedback which students expect also differs with age and experience relates to the findings of Orsmond and colleagues that experienced learners are more likely to seek a dialogue with tutors about their feedback rather than accepting it at face value and not using it more constructively (Orsmond, Merry, & Reiling, 2005). Can student expectations be changed by offering some guidance in using feedback? Weaver reported that nearly 50% of students believed that they had not had advice or guidance on how to use feedback (Weaver, 2006). Each of the three universities in this study provide support to help first-year students with taking good lecture notes, gaining more from tutorials and preparing for exams but perhaps not enough help with constructive use of feedback.

Our results suggest that feedback in first semester first year has to be more timely so that students can recognise and experience it as feedback and can see positive outcomes from constructively using feedback. Some feedback in first semester may be of limited use for the context in which it is offered but may provide the experience to allow better use of subsequent feedback. We argue that we need to give opportunities for students to begin a dialogue about their learning, using feedback to inform their understanding of how they learn. We believe the mechanism for this may be in incorporating reflection exercises into feedback on on-line assessments. We recommend that early use of feedback opportunities, especially those which include a self-reflective component, should be encouraged and could contribute to First Year Experience transition strategies. We propose to develop a structure where students will be encouraged to think about where they went wrong and why, and to also reflect on which areas gave them less trouble.

## **Conclusion**

The skills for gleaning the most from feedback are not necessarily innate and the skills for dealing with feedback via technology rather than face-to-face feedback need to be recognised and maximised if most benefit is to be obtained by the student.

Older more experienced learners gain more from feedback and view more types of feedback as having probable benefits to their learning. This may be due to a more reflective approach to feedback shown in older more experienced students. Developing the ability to reflect on performance is of particular pertinence to the shaping of the transition of school leavers to university students in large first year units. Feedback can provide a basis for a shift to autonomous, ongoing, lifelong learning but is only beneficial if perceived by students to be valuable and pertinent. Large class sizes require innovative strategies for assessment and feedback, and on-line feedback can be utilized to deliver feedback that encourages reflective practice and ensures that students gain more experience of feedback more quickly, and therefore benefit from the effects of age and experience seen in the findings of this study. The strength of this research study lies in the size and variety of the student cohort, the fact that it has been conducted over three universities with students taking a similar unit, thus any conclusion may be useful for developing theory about the issue of using feedback to engage students more fully in the learning process. Thus we believe that our findings can be generalised to other contexts within other discipline areas.

This study was made possible through a Carrick Institute Project Grant, 2005

## References

- Ford, N., & Chen, S. Y. (2001). Matching/Mismatching revisited: an empirical study of learning and teaching styles. *British Journal of Educational Technology*, 32(1), 5-22.
- Fyfe, S. D., & Fyfe, G. M. (1999). *Active learning for understanding in introductory Human Biology*. Paper presented at the Teaching & Learning Forum, Curtin University of Technology.
- Glover, C. (2004). *Report of research carried out at Sheffield Hallam University for the formative assessment in science teaching project (FAST) for the period 2002-2003*. Sheffield: Hallam University.
- James, R., McInnis, C., & Devlin, M. (2002). *Assessing learning in Australian universities*: Centre for the Study for Higher Education for the Australian Universities Teaching Committee.
- Krause, K.-L., Hartley, R., James, R., & McInnis, C. (2005). *The first year experience in Australian universities: findings from a decade of national studies*. Canberra: DEST Retrieved October 17, 2005, from <http://www.cshe.unimelb.edu.au>
- Lea, M., & Street, B. (2000). Student writing and staff feedback in higher education: an academic literacies approach. In M. Lea & B. Stierer (Eds.), *Student writing in higher education: new contexts*. Buckingham: Open University Press.
- Orsmond, P., Merry, S., & Reiling, K. (2005). Biology Students' Utilization of Tutors' Formative Feedback: A Qualitative Interview Study. *Assessment and Evaluation in Higher Education*, 30(4), 369-386.
- Peat, M., & Franklin, S. (2002). Supporting Student Learning: The Use of Computer-Based Formative Assessment Modules. *British Journal of Educational Technology*, 33(5), 515-523.
- Peat, M., Franklin, S., Devlin, M., & Charles, M. (2005). Revisiting the impact of formative assessment opportunities on student learning. *Australasian Journal of Educational Technology*, 21(1), 102-117.
- Poyatos-Matas, C., & Allen, C. (2005). *Providing feedback to on-line students: A new approach*. Paper presented at the HERDSA 2005, Sydney, Australia.
- QRS International, P. L. (2006). NVivo
- Ramaprasad, A. (1983). On the definition of feedback. *Behavioural Science*, 28, 4-13.
- Ramsden, P. (1992). *Learning to teach in higher education*. London: Routledge.
- Weaver, M. (2006). Do students value feedback? Student perceptions of tutors' written feedback. *Assessment and Evaluation in Higher Education*, 31(3), 379-394.
- Yorke, M. (2003). Formative assessment in higher education: Moves towards theory and the enhancement of pedagogical practice. *Higher Education*, 45(477-501).