



## The structure, use and impact of the staff version of *ORWET*

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**Abstract:** *Human Biology (HB) is a large junior course in the School of Biological Sciences, The University of Sydney that employs 15-20 casual staff members to help teach in the laboratory classes and assist in the marking of summative assessment activities. There is usually a considerable turnover of staff, which means a varying level of marking experience from year to year. A staff version of the Online Report Writing Evaluation Tool (ORWET) has been created and used in 2007 and 2008 to increase staff awareness and interpretation of the marking criteria for one of the assessment activities, scientific report writing. ORWET complements strategies already in place to train markers by providing a flexible learning environment from which staff can practise marking worked examples of the report. ORWET provides detailed feedback for each sample report so that staff can compare their interpretation of the marking criteria to the desired standard set out in ORWET. The tool aims to increase markers' confidence in marking and hence the quality of the feedback provided to students. Consistency in marking between multiple markers in a large course will also increase student confidence in the marking process. This paper describes the structure of the staff version of ORWET, its influence on consistent marking practices and the results of a staff evaluation of the tool.*

### Introduction

Over the years, permanent staff numbers have declined in First Year Biology and reliance on the employment of casual staff has increased. The Human Biology (HB) course in the School of Biological Sciences employs approximately 20 casuals every year. The casuals have varying backgrounds and teaching experience. New casual staff members are supported by an induction process which includes attending the Tutor and Demonstrator Training Workshop run by the Faculty of Science, Science Faculty Education Research Group (SciFER), as well as an introductory meeting on the course's structure and content. All staff members are also provided with the staff version of the course reader which contains instructional information for staff and answers to questions.

There is a heavy reliance on casual staff to mark assessment activities such as the summative scientific report. In a large course such as HB, with approximately 1100 students, the assistance of multiple staff members is required. The staff version of Online Report Writing Evaluation Tool (*ORWET*) was created to support staff in the marking of the report, reduce inconsistencies in expectations and emphases and thereby reduce the costly and time consuming exercise of remarking. It also addressed comments from some staff on the need for worked examples.

*ORWET* can be used by individual staff members according to their needs and teaching experience. It provides timely feedback in a flexible learning environment. The release of *ORWET* in *WebCT* also allows staff to familiarise themselves with one of the major learning resources, *HBOnline*, and the blended learning environment of HB (Lilje, Krishnan and Peat 2007; Lilje and Peat 2006). The interactive examples of report writing in the staff version of *ORWET* introduce staff to the diverse standards of student report writing. It also allows staff to familiarise themselves with the marking criteria, the standard of marking and type of feedback. By increasing staff confidence in the marking process it is hoped that this will translate into increasing consistency and quality of marking between multiple markers. Increased staff confidence and understanding of feedback will impact on the quality and standard of teaching provided to students.

This paper describes the structure of the staff version of *ORWET*, its influence on consistent marking practices and the results of a staff evaluation of the tool.

## Materials and method

The *ORWET* structure utilises the quiz function of *WebCT*. The staff version of *ORWET* is made up of three modules or exercises which are based on one of three experiments, 'Energy Intake and Expenditure', 'Push-up Exercise' and 'Caffeine Consumption' (School of Biological Sciences, 2006, 2007 and 2008). These experiments are rotated from year to year as part of the summative scientific report writing assessment in HB. For each experiment five sample reports or quizzes have been created of varying quality. Detailed feedback is provided for each sample. Staff can access as many of the samples as they like. Each sample can be marked according to a set of marking criteria used for all experiments with slight variations according to the topic. Detailed feedback is provided at the end of each quiz after it has been submitted for marking. In 2007 HB staff attended a markers' meeting, in addition they were given access to the 'Caffeine Consumption' and in 2008 to the 'Energy Intake and Expenditure' modules prior to marking. The modules corresponded with the summative scientific report writing completed by students in the respective years.

*ORWET* was released to staff members involved in marking two weeks before students submitted their summative scientific reports. The *ORWET* questionnaire was released to staff members at the end of the marking period. The questionnaire responses were collected from consenting staff members. In addition to demographic information, quantitative questions that used a Likert scale for measuring responses (Likert 1932) and qualitative open-ended questions that were thematically analysed and categorised (Denzin and Lincoln 1994) were collected. The Likert rating scale was numerically coded from 1 to 5 where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree (Moni, Moni, Poronnick and Lluca 2007). The markers' report mark means were compared to the class mean for 2007 and 2008 respectively, to determine whether marking was consistent. A one-sample two-tailed student's t-test was used to determine whether the markers' means were different from the class mean.

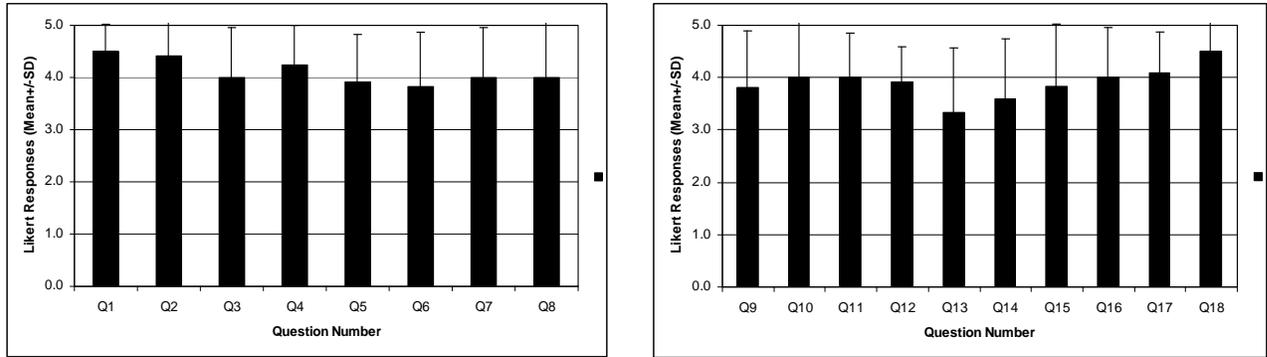
Approval for this study has been obtained from The University of Sydney, Human Research Ethics Committee (Ref. No. 11-2007/104-48).

**Table 1.** *ORWET* questionnaire

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Question 1:	The purpose of <i>ORWET</i> is clear.
Question 2:	The purpose of <i>ORWET</i> is relevant to me.
Question 3:	The content of <i>ORWET</i> is appropriate.
Question 4:	The content of <i>ORWET</i> is pitched to my level.
Question 5:	Site maintains my interest.
Question 6:	Comprehensive instructions are available at all times.
Question 7:	Information is organised into sections.
Question 8:	Method of operation is consistent throughout.
Question 9:	Layout is well designed.
Question 10:	Screen layout is consistent throughout.
Question 11:	Screen is easy to read.
Question 12:	Colours are used effectively.
Question 13:	Program is visually attractive.
Question 14:	Site effectively evaluates my understanding of the marking criteria.
Question 15:	Provides appropriate and useful feedback.
Question 16:	Overall the feedback/reinforcements are helpful.
Question 17:	Time taken to use the site is worthwhile.
Question 18:	Using the site increases user's confidence in their ability to mark student reports.

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Figures 1 and 2. Staff responses (mean $\pm$ SD) to questions in the *ORWET* questionnaire.

## Results

The results of the 2007 and 2008 staff demographics ( $n=12$ ) indicate that one marker was employed full-time by The University whereas two were employed part-time and nine casually employed. Two of the markers are postdoctoral fellows, three postgraduate students, four are graduates and three have either an MSc or PhD.

The marking process was consistent as there was no significant difference between the markers' means and the 2007 and 2008 class means (one-sample student's  $t$ -test,  $t(14)=0.47$ , two-tailed  $p=0.6$ ,  $t(11)=2.06$ , two-tailed  $p=0.06$  respectively). Consistency is of particular importance in large courses such as Human Biology where multiple markers are required.

Most of the respondents to the questionnaire either agreed or strongly agreed with the positive comments made about the purpose of *ORWET*. The majority of respondents agreed or strongly agreed that *ORWET* was helpful and worthwhile. The majority also agreed or strongly agreed that the tool gave them more confidence to mark student reports. Four of the staff members thought that *ORWET* was excellent, six thought it was good, one thought it was average and one thought it needed improvements.

## Discussion

The staff version of *ORWET* was created in response to staff comments that they needed more worked examples of how to mark the scientific report. The option to make available traditional paper-based examples was considered. However, the flexibility of an online tool that allowed staff to determine time, place, pace and process of learning (Evans and Fan 2002; Inglis, Ling and Joosten 2002, Peat and Franklin 2002) seemed more appropriate for this diverse group. An online resource such as *ORWET* can also provide a more interactive environment that replicates the process of marking.

Response to the *ORWET* questionnaire indicated that staff members either agreed or strongly agreed to positive comments about the purpose, content, user-friendliness, legibility, feedback and relevance. Modifications to the navigability of *ORWET* have been incorporated into the staff version of *ORWET* in response to staff comments. Other comments made in the open-ended questions in the *ORWET* questionnaire related to the opportunity provided by *ORWET* to compare marking attempts and the provision of immediate feedback. Comments such as: 'It will be a very useful tool for those who have never marked similar reports' and 'It is important to see what others would do in a situation that is not clear - i.e. borderline marks.' reflected the intended objectives of

the tool. Staff also pointed out that inconsistencies in the marking of the worked examples may diminish confidence in *ORWET*. Corrections have been made to reduce inconsistencies in the tool.

When using the site for establishing a marking scheme, it seems quite useful in getting all markers on the same page before coming to the meeting to finalise the scheme, therefore saving time for all involved.

Consistency in marking between staff members was also an important objective of *ORWET*. The diversity of experience in HB report marking can lead to variation in the marking process. *ORWET* provides an opportunity for all staff members to develop an understanding and hence increase their confidence in report marking. *ORWET* was created to support the other resources available to staff such as the markers' meeting. The markers' meeting deals with administrative issues, clarification of the report content and expectations. It complements *ORWET* by giving staff members an opportunity to address any other queries and learn from more experienced markers.

Staff used *ORWET* differently according to their experience in marking. A casual staff member who had been marking HB reports for four years commented that:

'The strengths for me came from the very well set out marking scheme... with examples that I was able to print out and use... i.e. I didn't really find the *ORWET* site that useful but the 0, 1, 2 marking scheme set out was really handy. Please note that I am a fairly experienced marker and so this may not be the case for less experienced markers.'

A less experienced casual staff member who had been marking the HB reports for half a year commented that:

'I would like to see the sample reports independent of the quiz to mark – I think that by the time I had gone through 2 or 3 I was ok, but just needed to look at different types of reports that scored well in one area and not in another to get a feel for it.'

Staff members also provided useful ideas of how to make *ORWET* more effective by modifying its presentation at the markers' meeting. Many comments related to more face-to-face discussion of the report samples during the markers' meeting. Future iterations of *ORWET* will take these ideas into consideration.

In conclusion, the use of *ORWET* as part of staff training in marking scientific reports has been well received by the staff involved. Overall, staff commented that the provision of worked examples enhanced their understanding of the expected standards and had given them more confidence in marking student assessment activities. The flexible, interactive tool is used differently according to the needs and experience of markers, but it resulted in consistency in marking between multiple and diverse markers. To improve its effectiveness, *ORWET* will in future be integrated more with traditional face-to-face discussion of the marking process.

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