

# Case-based Scenarios within the Veterinary Pharmacology and Therapeutics Course, application of interactive e-learning and assessment

## Introduction

Application of knowledge to realistic clinical scenarios encourages active learning, stimulates a greater understanding of lecture material and develops students' abilities to source current factual information and thus develop skills required for life long learning.

## Aims

Interactive virtual scenarios were developed to enable students to:

- Become familiar with the use of various resources
  - printed compendiums/formularies
  - NOAH/VMD websites etc
 to find relevant posology and legislation.
- Develop numeric skills associated with treatment protocols.
- Gain a working knowledge of legislation relating to the use of veterinary medicines.
- Understand the range of methods of application of drugs in live animals.
- Enhance their knowledge of the different drug classes and their uses.

## Overview

- 2 formative plus 15 summative weekly scenarios
- One-week to complete Moodle Quiz.
- Case answers and relevant issues were discussed with the class immediately following the submission deadline.
  - exempt from University policy on late submission
- Variable pass marks, auto-fail criteria
- 15% of the final course mark.

## Student Feedback

Virtual scenarios were

- very well received
- encouraged group discussion and collaborative working
- resulted in greater engagement of students with:
  - Core pharmacological principles
  - Clinical relevance of lecture material
  - Practical and legal issues relating to drug use
  - Course content

## Assessment

- Moodle Quiz with a mix of manual and automatic marking
  - increased flexibility
  - reduced marking time
  - facilitated feedback
- Submission rate very high (>99%)
- Standard of achievement high
  - range of individual marks 27-100%, excluding autofails
- Class average across the year 79%

## Challenges

- Designing questions that are challenging without increasing the amount of manual marking
- Creating calculation questions which enable a student to demonstrate the steps in the calculation

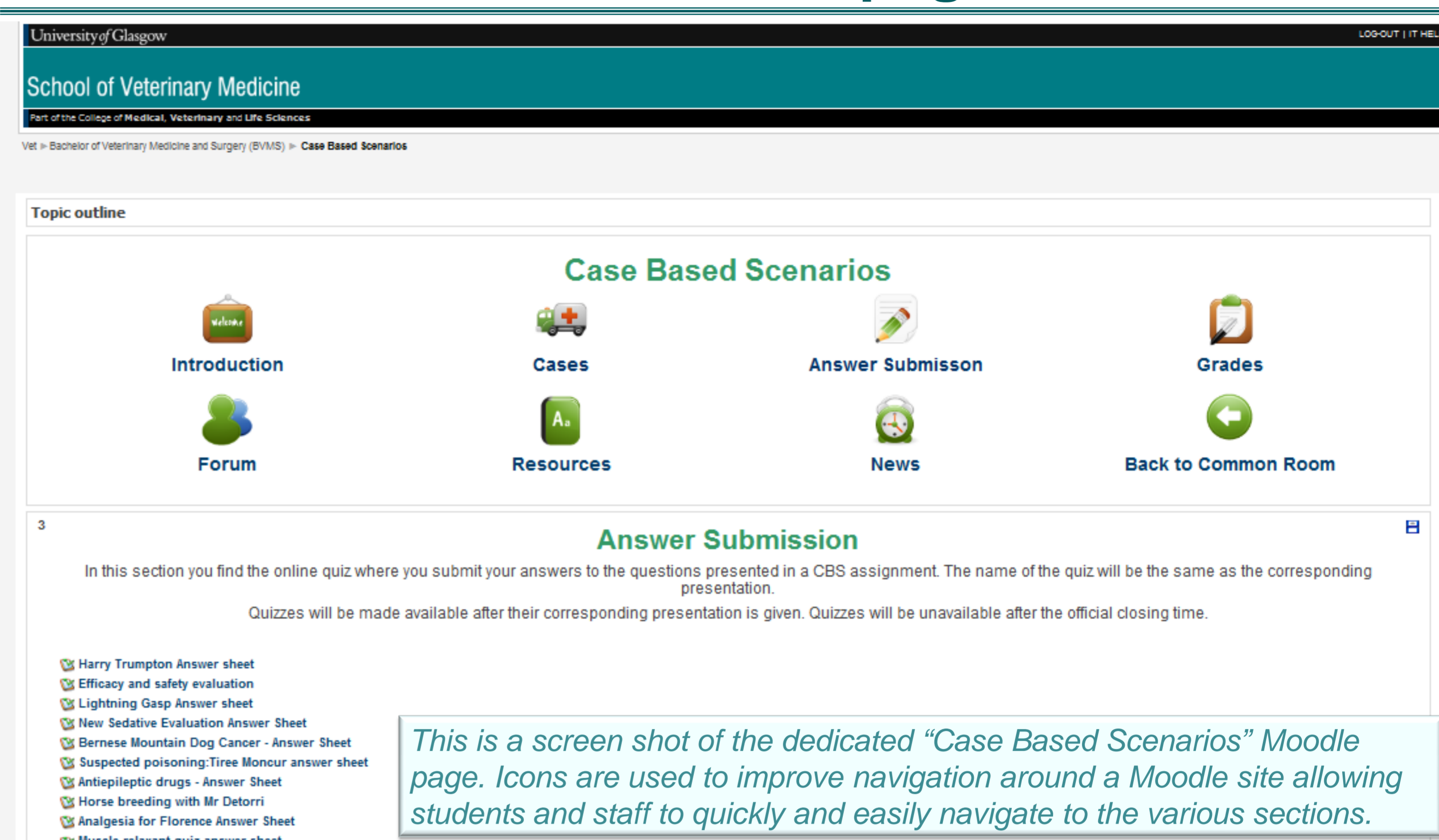
## Next steps

- Continue to expand database of cases
- Extend across the BVMS programme and beyond

## Outcomes

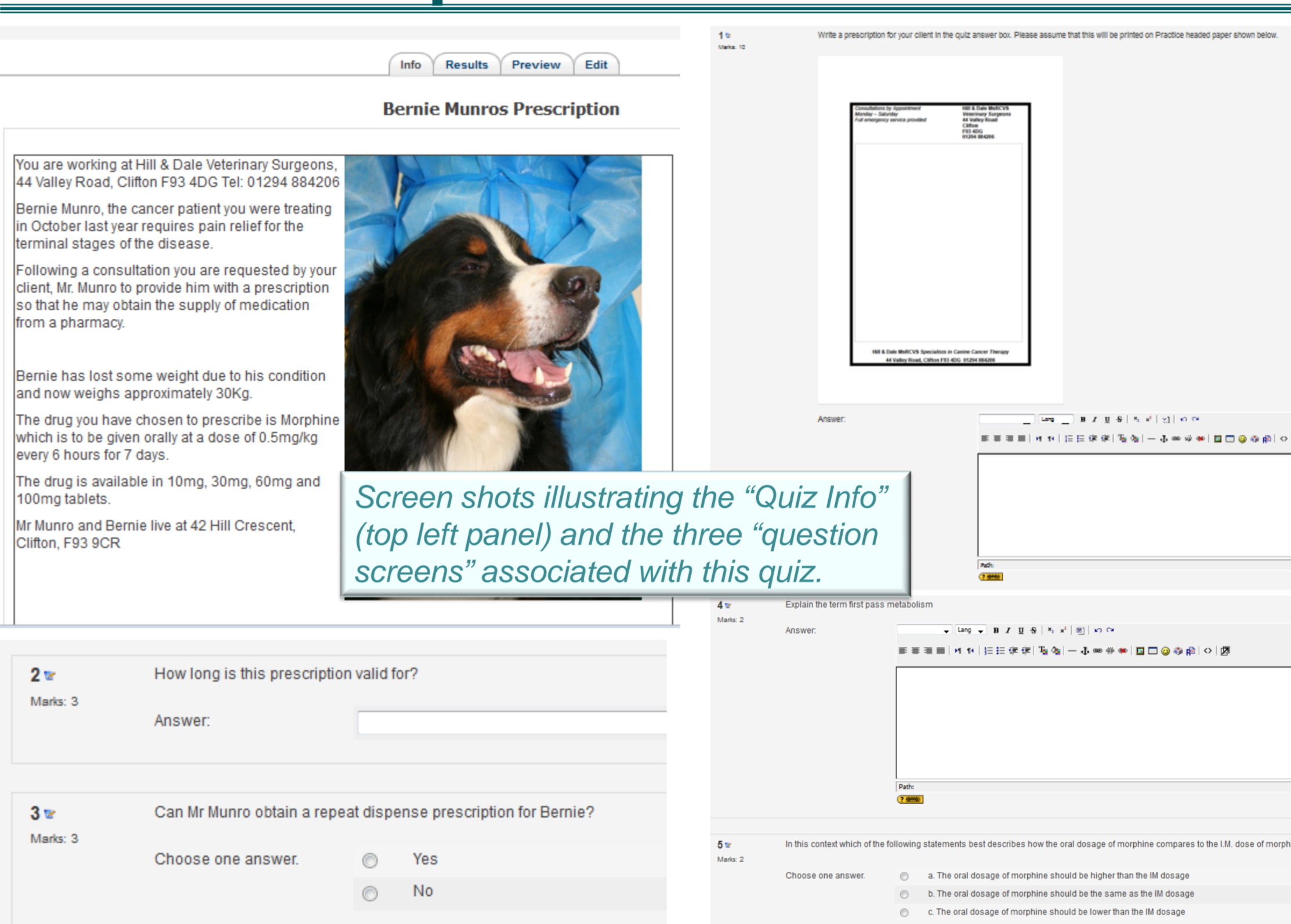
- Appreciate the functionality within Moodle Quiz for assessment and feedback
- Understand the challenges of designing questions suitable for e-assessment

## Case Based Scenario Moodle page:

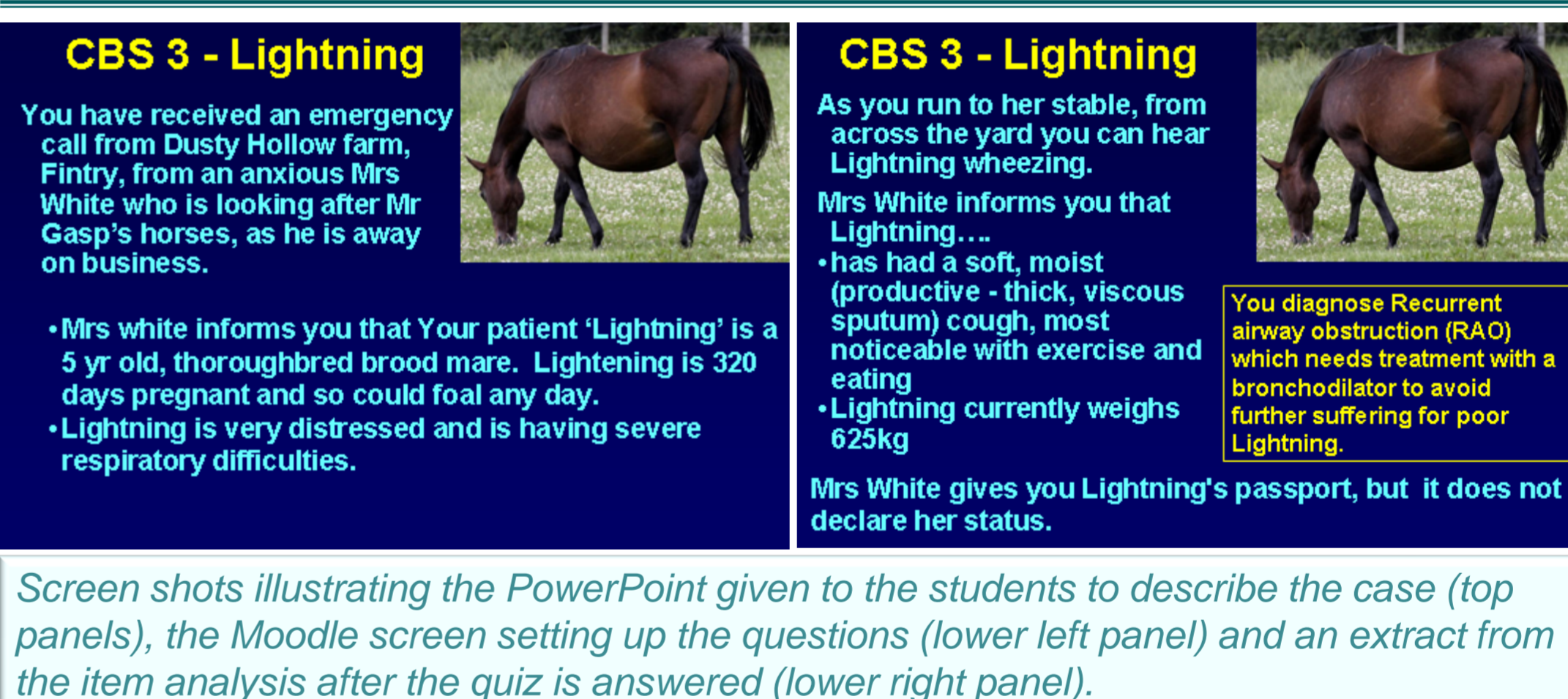


This is a screen shot of the dedicated "Case Based Scenarios" Moodle page. Icons are used to improve navigation around a Moodle site allowing students and staff to quickly and easily navigate to the various sections.

## Three Example Cases:



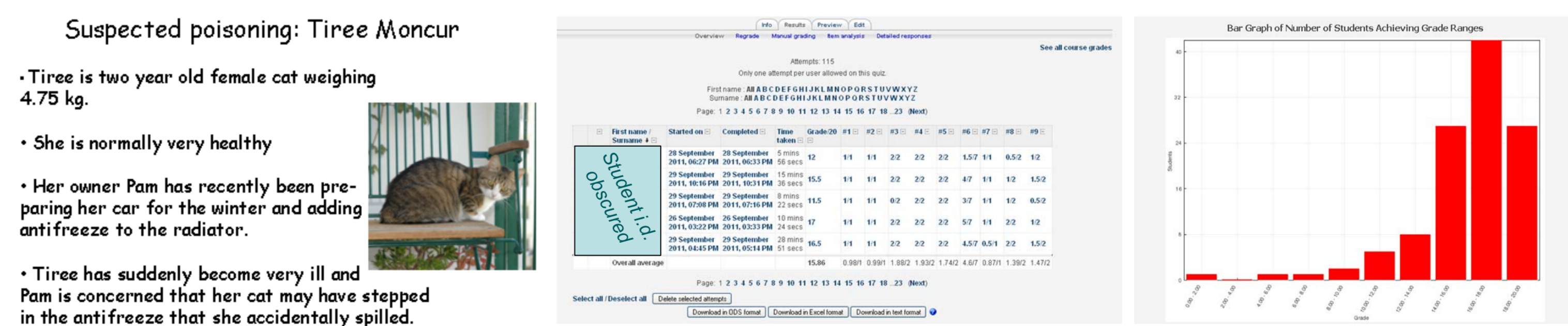
Note: we created a "Prescription Pad" which the students could cut and paste into Moodle but the formatting was incompatible. Use of the image in this example avoids this issue.



Screen shots illustrating the PowerPoint given to the students to describe the case (top panels), the Moodle screen setting up the questions (lower left panel) and an extract from the item analysis after the quiz is answered (lower right panel).

Order	Question name	Type	Grade	Action	Score	Percentage	Standard Deviation	Reliability
1	What drug is most appropriate for Lightning's immediate treatment (Drug A)?	Multiple choice	2	View	1.00	100%	0.00	0.99
2	What drug would you recommend for Lightning's longer term treatment (Drug B)?	Multiple choice	2	View	1.00	100%	0.00	0.99
3	What legal category are the selected drugs?	Multiple choice	2	View	1.00	100%	0.00	0.99
4	How does the veterinary medicine regulations influence how you can use these drugs?	Multiple choice	2	View	1.00	100%	0.00	0.99
5	How much of drug A is to be administered for the initial treatment?	Multiple choice	2	View	1.00	100%	0.00	0.99
6	How will you administer drug A?	Multiple choice	1	View	1.00	100%	0.00	0.99
7	You will have sufficient volume of drug B for 3 days treatment. How much will you use?	Multiple choice	2	View	1.00	100%	0.00	0.99
8	What is the route and pattern of administration for drug B?	Multiple choice	1	View	1.00	100%	0.00	0.99
9	In your records and on the horse passport what will be the maximum stated withdrawal period for drug B?	Multiple choice	1	View	1.00	100%	0.00	0.99
10	Why does this case warrant use of two bronchodilators?	Multiple choice	2	View	1.00	100%	0.00	0.99
11	Which receptors do the two drugs act through?	Multiple choice	2	View	1.00	100%	0.00	0.99
Total					10	100%	0.00	0.99
Maximum grade					20			

Note: it is possible to add in additional "correct" answers for auto-marking even after the quiz has commenced or, alternatively, to manually over-ride marks for individual students.



Screen shots illustrating the PowerPoint given to the students to describe the case (top left panel), the Moodle results screens allowing analysis of individual performance for each question (top middle panel) or an overview of the cohort performance (top right panel) and an extract from the item analysis after the quiz is answered (lower left panel).

Question name	Type	Grade	Action	Score	Percentage	Standard Deviation	Reliability
What drug would you recommend for Lightning's longer term treatment (Drug B)?	Multiple choice	2	View	1.00	100%	0.00	0.97
ipratropium bromide				1.00	100%	0.00	0.97
Salmeterol				0.00	0%	0.00	0.97
ipratropium Bromide				0.00	0%	0.00	0.97
Long acting antimuscarinic bronchodilator: Atrovent® (ipratropium bromide)				0.00	0%	0.00	0.97
ipratropium Bromide				0.00	0%	0.00	0.97
ipratropium Bromide				0.00	0%	0.00	0.97
ipratropium bromide				0.00	0%	0.00	0.97
ipratropium Bromide				0.00	0%	0.00	0.97

Note: Moodle does not indicate to the students what question type is being used. However specific instructions can be given within the quiz question to make it clear to students that a simple numerical answer is required.

This case also used a mix of question formats. Numerical questions can have a specific answer or a range of correct answers as used here. The Item Analysis for the numerical question illustrates the range of acceptable values along with an assortment of student answers which did not conform to the format recognised by Moodle.