

# Writing quiz questions for online

## Contents

Introduction .....	1
Quiz development steps .....	2
Common quiz question types .....	3
True/False.....	4
Multiple choice.....	5
Missing item .....	7
Click to reveal .....	8
Other types of quiz questions.....	9
Verification .....	9
Unfolding story.....	11
Group Activity.....	12
Useful links.....	13

## Introduction

This resource information is intended to assist staff in the creation of quizzes for use in online learning materials. The design and writing of quizzes may be done in the University's virtual learning environment (VLE) Brightspace module space or within learning objects.

The use of formative quizzes in online materials can provide several benefits; they provide an aid to revision, they can test factual recall and understanding of the learning material, they can be repeated and they can provide immediate feedback.

By using graphics and interactive elements, online quizzes can provide an enhanced learner experience.

Quizzes in online material should test and challenge the understanding of material in a pedagogically sound way and although online quizzes are usually considered an objective testing mechanism, with some thought and imagination, it is possible to design quizzes to test the higher orders of [Blooms taxonomy](#) such as interpretation, comparison and analysis.

# Writing quiz questions for online

## Quiz development steps

The steps below set out the questions you should answer and the issues you should look at when designing your online quizzes.

1

- What are you trying to test? Understanding as they work through the material, comprehension of overall themes or concepts etc?
- How do you want the learner to use the quiz? As they are working through online material, for exam revision, for printing off and sending to the tutor etc?
- How does this fit in with the rest of the content and the learning outcomes?

2

- What level should the questions be at? Academic level and Blooms (or equivalent, keyword?)
- Look at Blooms taxonomy - see the staff support portal resource explaining how to use [Blooms taxonomy](#) to improve your resources.

3

- Decide where in the materials you want the quizzes so that they will fulfil the aim and answers to step 2 questions.
- Do you want them for example throughout the material or at the end of the page / section / RLO?

4

- Decide the best type of quiz and quiz question to achieve the desired outcome.
- Think of innovative ways to use common types of quiz questions like true/false, multiple choice etc. For example the use of visual and audio mediums.
- If you have non-standard quiz items (like crosswords or word searches for example), look at ways that the question can be re-written or make this type of question within the VLE or externally and import the item or the link to the VLE.

## Writing quiz questions for online

- Be aware that for quizzes within an HTML5 resource, mixing the quiz question types within the one quiz will increase EDU development time significantly. For example, it is better to have several small quizzes where each quiz is all multiple choice, all true/false etc than one large quiz of multiple types. This is not an issue for quizzes made within Blackboard.

### Common quiz question types

Quizzes can be incorporated into the learning experience in a variety of ways:

- By using the tools provided in the VLE
- By incorporating them into html5 resources

#### VLE

Using the quiz engine in Brightspace has the advantage of allowing contextualisation, quick access for editing, tracking of the results and a wider range of question types.

Visit the EDU's guide to [Quizzes](#) where you can see how to set up, preview and deploy quizzes in Brightspace.

#### HTML5

Asking for quizzes to be built into HTML5 or SCORM resources by the EDU means that they will be closely contextualised to the rest of the learning material in the resource, and stay within the learning object if it is moved.

The disadvantage is that once within the HTML5 learning object, staff cannot amend the material themselves or track the results easily. Therefore, quizzes within the HTML5 materials are best suited to material that will not change significantly from year to year or quiz types that are 'pause and reflect' i.e. used to pace the learner through the learning materials.

This learning resource will concentrate on writing quizzes for EDU online materials developed in an HTML5 template, however the guidance given on writing good quiz questions is equally useful if you are writing quizzes in the VLE or in an external software package and importing the quiz to the VLE.

## Writing quiz questions for online

When creating resources as part of curriculum projects, the EDU will sometimes use an HTML5 template for the development work which:

- incorporates responsive design, ensuring that our material will work well on all screen sizes;
- functions completely on any device or platform;
- is up to date with industry standards;
- allows developers more control over the look, feel and functionality of the resources.

The following pages look at the types of quiz questions which can be developed in the HTML5 template

### True/False

True and False questions can be considered one of the most simple question types and are often used as 'pause and recap' activities throughout the online material.

#### **Important points:**

- A 'qualified' type of true/false can be used as long as rules are explained and the learners have been familiarised with them previously.
- There can be one, or a series of true/false statements attached to an image, diagram or audio/video clip.
- The learner has a 50% chance of guessing correctly, so T/F questions can be of limited relevance in trying to gauge how well a learner understands the material. Good feedback is therefore very important so that even learners who guess the answer correctly, understand why they were correct.

## Writing quiz questions for online

Are the following statements True or False?

---

1. A Rotodynamic pump is typically used for high volume, low pressure systems

True

False

---

2. A Fan is simply a pump for moving air

True

False

---

3. A vane pump is a positive displacement pump

True

False

### Useful links

eLearning Industry: [True/False Questions: Getting Them Right](#)

University of Texas at Austin: [True-False Questions](#)

University of Bristol: [Suggestions for writing true/false questions](#)

### Multiple choice

Multiple choice questions (MCQs) can be based on text, images, diagrams or listening to audio/watching a video clip and choosing the correct option.

MCQs are probably the most commonly used question type due to their perceived ease of creation, however, it requires considerable thought and preparation to produce high quality questions and a meaningful list of options.

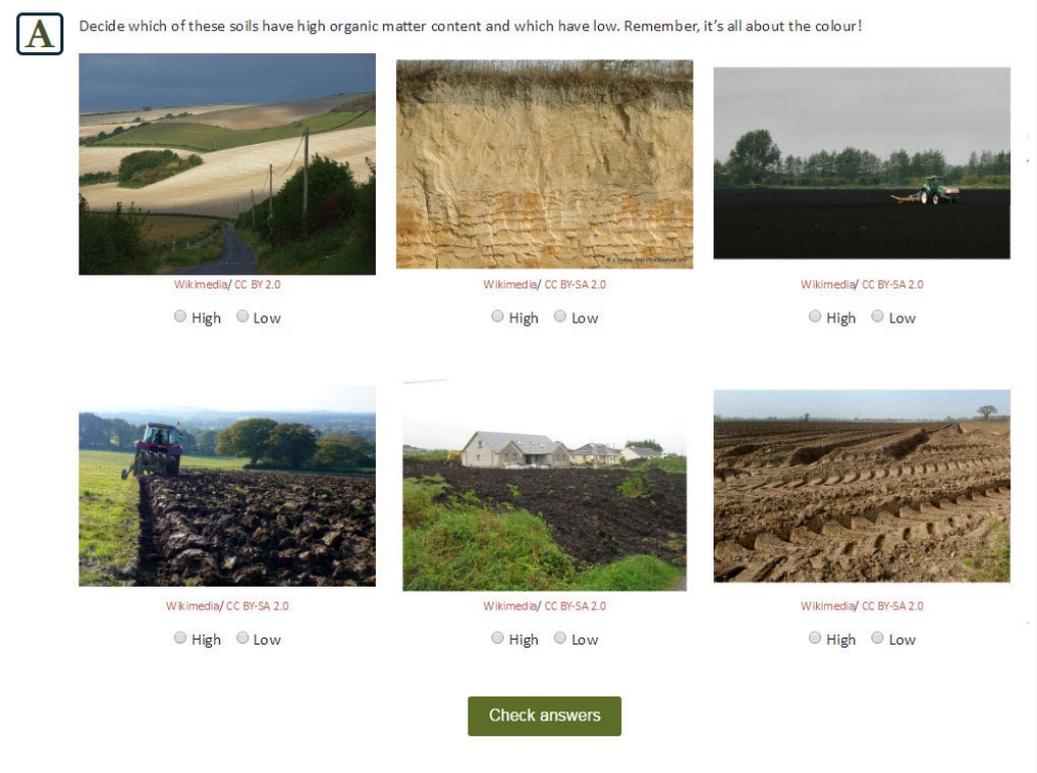
The question and options should be written so that the learner learns something from the question even if they get it wrong, and should have their knowledge reinforced if they get it correct.

## Writing quiz questions for online

### Important points:

- The alternative answers should be realistic and look similar in length with similar sentence structure.
- The answers should be random and follow no discernible patterns e.g. alternate questions answer 'A' or cycle through A, B, C, D.
- Clear instruction as to whether there is one or more than one correct answer. Ideally keep to having only 1 correct answer.
- Use options of 'All of the above' or 'None of the above' very sparingly as the 'All of the above' option can encourage guessing if the learner thinks one or two answers are correct. Using 'None of the above' means that you can't tell if the learner really knew the correct answer or was just guessing.
- Don't ask trick questions or use trick options where the reading of the question is being tested and not the actual knowledge required to answer it.

**A** Decide which of these soils have high organic matter content and which have low. Remember, it's all about the colour!



The quiz interface consists of six soil images arranged in a 2x3 grid. Each image is accompanied by a radio button for 'High' and 'Low' organic matter content. The images are: 1. A landscape with rolling hills and a blue sky. 2. A cross-section of a soil profile showing distinct layers. 3. A field with a tractor and a large area of dark, rich soil. 4. A tractor plowing a field, creating a large mound of dark soil. 5. A house with a large area of dark soil in the foreground. 6. A field with rows of soil, showing a dark top layer and a lighter bottom layer.

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High    Low       High    Low       High    Low

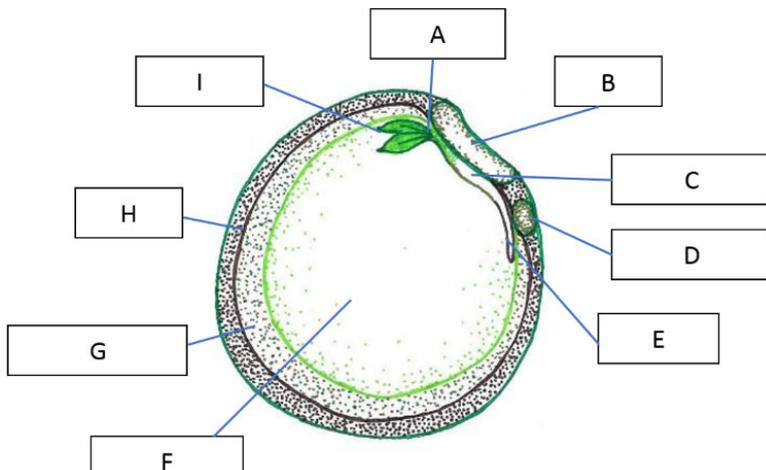
Wikimedia/ CC BY-SA 2.0      Wikimedia/ CC BY-SA 2.0      Wikimedia/ CC BY-SA 2.0

High    Low       High    Low       High    Low

[Check answers](#)

## Writing quiz questions for online

Fill in the names of the seed parts on the diagram below.



The diagram shows a cross-section of a seed. The parts are labeled as follows:

- A: Embryo (the green part)
- B: Endosperm (the white part)
- C: Seed coat (the outer layer)
- D: Hilum (the scar on the seed coat)
- E: Micropyle (the small opening at the bottom)
- F: Cotyledon (the large, fleshy part)
- G: Perisperm (the outer layer of the cotyledon)
- H: Scutellum (the large cotyledon)
- I: Plumule (the small green part at the top)

Item A

Item B

Item C

### Useful links

UCD: [Assessment](#)

Cathy Moore: [Scenarios: What are they good for?](#)

University of Texas at Austin: [Multiple Choice Questions](#)

Vanderbilt University: [Writing Good Multiple Choice Test Questions](#)

Brigham Young University: [14 Rules for Writing Multiple Choice Question](#)

UHI: [Assessment Design - MCQs](#)

### Missing item

This type of quiz question is useful for providing the learner with an opportunity to revise the learning material.

- Words - missing from a phrase, sentence or list.
- Visual - missing image as part of a sequence, missing part or label for a diagram or missing number in a sequence

## Writing quiz questions for online

- Audio - spoken sentence with missing word as a blip - this would be mostly useful for languages subjects e.g. Gaelic.

**A** Read these notes and then fill in the missing words below.

- [Fodder Beet Growers Guidelines](#)

**Word bank**

weeds	eelworm	June	light
October	glyphosate	nitrogen	pH
ploughed	highest	seed	seedbed
boron	insecticide	catch	hectare

Fodder beet needs  soils with good drainage to grow well, and in the right conditions it is one of the  yielding fodder crops. Seed bed preparation is important and the field should be  to a good depth to allow the roots to grow freely and the  of the soil should be 6.5-7. Organic manures are ideal feed for this crop because they release their nutrients between  and  which is when the crop is growing at its highest rate.  should also be applied to the  to feed the germinating seedlings at a rate of 40kg per . Sodium, magnesium, manganese and  may need to be added if the soil is deficient.

Weed control is very important for fodder beet and perennial weeds can be controlled with  spray, smothering with a  crop or ploughing. Inter-row cultivators can be used to control  between rows. Wireworm can be a problem for fodder beet and can be controlled by  treatment. Aphids and flea beetles can be controlled with  spray, but leatherjackets and beet cyst  can also be an issue and are difficult to control.

[Check answers](#)

### Useful links

iSpring: [8 Tips for Writing Good Fill-in-the-Blank Questions in E-Learning Courses](#)

### Click to reveal

Click to reveal can be an activity or a quiz question and is suitable for situations where there might be a more subjective answer.

- Learners can be asked to provide their answer to a question in a text box and can then view suggested answers or examples by clicking a button.
- This is a good option where the answer requires higher order thinking or a check on the understanding of the material.

## Writing quiz questions for online

**A** **Question**

Although most viruses have double stranded DNA (dsDNA) some have single stranded DNA (ssDNA). If DNA extracted from a virus has 30% adenine, 20% thymine, 35% guanine and 15% cytosine, would you interpret this as the virus having dsDNA or ssDNA?

[Check answer](#)

Because the proportion of adenine is different from the proportion of thymine and the proportion of guanine is different from that of cytosine it would be assumed this virus had ssDNA.

**Activity**

What different Social Services could be provided for the following individuals?

Older individuals	Individuals with disabilities	Children and families
•	•	•
•	•	•
•	•	•
•	•	•

[Suggested answers](#)

## Other types of quiz questions

There are several types of less common quiz questions that provide an opportunity to use staged feedback and answers or address the higher skills areas of Blooms Taxonomy such as analysis and evaluation.

### Verification

Verification quizzes are useful for making the learner think about the question as there is no easy way to reach the answer and it has to be correct.

For example the learner can be asked to complete a calculation and submit the result into a text box, the result is verified against a known answer(s) and they receive feedback. In the event of an incorrect answer feedback can be given in the form of a hint with a correct answer being required to be successful.

## Writing quiz questions for online

As this question type requires no coding to develop in the VLE, staff must consider whether this type of quiz should be used in the HTML5 learning object or in the VLE.

### Example 1

Given the following information, calculate the volume of a cylinder that is 10cm high and has a diameter of 5cm. Round your answer to 2 decimal places and type it into the box provided.

**Formula:**  $V = \pi r^2 h$

The volume of the cylinder is:  cm<sup>3</sup>

[Check answer](#)

The answer we would be looking for in this example activity is 196.35 cm<sup>3</sup>.

We could also provide a hint for an incorrect answer, for example:

#### Hint

Have you remembered to halve the diameter to find the radius? Have you remembered to square the radius?

### Example 2

In this enhanced version of example 1, the learner fills in the blank boxes then clicks on the 'check answers' button.

The answers are verified against a list of correct answers. Those answered turn green and incorrect answers turn red. An incorrect answer hint is also given to prompt the learner to check.

## Writing quiz questions for online

Diameter(d)	Height(h)	$\pi r^2$	Units	Volume	Units
10cm	0.5m	<input type="text"/>	cm <sup>3</sup>	<input type="text"/>	cm <sup>3</sup>
0.7m	2m	<input type="text"/>	cm <sup>3</sup>	<input type="text"/>	m <sup>3</sup>
1.5m	10m	<input type="text"/>	cm <sup>3</sup>	<input type="text"/>	m <sup>3</sup>
3cm	2.5m	<input type="text"/>	cm <sup>3</sup>	<input type="text"/>	cm <sup>3</sup>
0.75m	10cm	<input type="text"/>	cm <sup>3</sup>	<input type="text"/>	cm <sup>3</sup>

Check answer

## Unfolding story

An unfolding story can be created using a verification feature. This prevents the learner from moving to the next question until they answer the first one correctly. The output from the first question can also be carried to the following question, thus building on previous knowledge.

Look up the Scientific names for 20 of the species in the lists below.

Click the habitat name on the left to see a list of associated species

A1 - native/semi-natural woodland	<b>A1 - native/semi-natural woodland</b>
A2 - willow	<ul style="list-style-type: none"> <li>• Scots Pine</li> <li>• Juniper</li> <li>• Birch</li> <li>• Rowan</li> <li>• Aspen</li> <li>• Oak</li> </ul>
C2 - tall herbs	<ul style="list-style-type: none"> <li>• Hazel</li> <li>• Holly</li> <li>• Hawthorn</li> <li>• Bird-Cherry</li> <li>• Willows</li> <li>• Ash</li> </ul>
D1/D2 dry/wet heath	
E1 - bog	
E2 - springs	

This technique can also be used to create secure answers where a code is required in order to reveal the answer. This prevents 'happy clicking' where the learner automatically clicks the reveal instead of attempting the question.

## Writing quiz questions for online

This type of quiz question is complex to create and would involve a significant amount of planning and development time. It is best used as a bespoke or feature item rather than multiple questions.

**Solution**

Enter the lockcode provided by your tutor:

**Solution**

## Group Activity

This type of quiz question asks the whole group or sub-groups to discuss and answer the question. The answers can be either viewed as suggested answers, discussed in class or produced as a printed document.

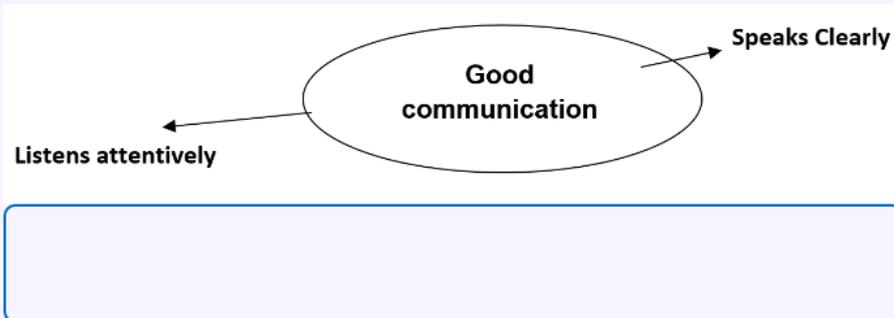
One consideration with this type of question is whether it should be produced as an HTML5 resource or whether it would be better placed in the VLE module space using functionality such as a forum so that activity could be captured.

## Writing quiz questions for online



In pairs consider this question and complete the chart below.

Try to come up with at least 8 other points relating to good communication.



From all the information you have been researching and reading think about the importance of working collaboratively with your colleagues on placement or in your place of work. What are the advantages to your workplace and service users if you do this? Work in pairs to think about this. One has been given to start you thinking:

- Working with others as a team means less isolation and more chance to think things through to make sure you meet the highest standard of care for the users of the service.

[View suggested responses](#)



In pairs, make a list of words and actions (related to a social services setting) that you feel have a positive or negative meaning. Then discuss the implications of using both the positive and negative language. What effect does each have on relationships between care workers, practitioners, service users and families?

### Remember!

**Positive language is:** empowering, anti-discriminatory, inclusive.

**Negative language is:** disempowering, discriminatory, exclusive

	Positive	Negative
Verbal	<input type="text"/>	<input type="text"/>
Non-verbal	<input type="text"/>	<input type="text"/>
Written	<input type="text"/>	<input type="text"/>

[Print all answers](#)

## Useful links

This is just a small selection of the wealth of information available on the internet about writing good quizzes for online learning materials.

## Writing quiz questions for online

[Good Practice Guide to question and test design](#)

Information on levels in pages 9 - 11 and on types of questions in Section 2, pages 12 – 23

[E-assessment by design: using multiple-choice tests to good effect](#)

Academic paper, University of Strathclyde

[Exam questions: types, characteristics, and suggestions](#)

Centre for Teaching Excellence, University of Waterloo

[SQA Guide to Assessment](#)

Scottish Qualifications Authority