A Moodle question type for creating multiple-choice questions fast

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We call the question type Blackwater
(after a river in Essex)

A fragment of your lecture

$$\forall \varepsilon \; \exists N : \forall n > N \; |a_n - a| < \varepsilon$$

A possible distractor

$$\forall \varepsilon \; \exists N : \forall n > N \; |a_n - a| < \varepsilon$$

$$\exists \varepsilon \; \forall N : \exists n > N \; |a_n - a| < \varepsilon$$

Another possible distractor

$$\forall \varepsilon \; \exists N : \forall n > N \; |a_n - a| < \varepsilon$$

$$\forall \varepsilon \; \exists N : \forall n < N \; |a_n - a| > \varepsilon$$

A multiple-choice question prepared by hand

1. $\forall \varepsilon \; \exists N : \forall n > N \; |a_n - a| < \varepsilon$
2. $\exists \varepsilon \; \forall N : \exists n > N \; |a_n - a| < \varepsilon$
3. $\forall \varepsilon \; \exists N : \forall n < N \; |a_n - a| > \varepsilon$
4. $\exists \varepsilon \; \forall N : \exists n < N \; |a_n - a| > \varepsilon$

When we choose meaningful distractors, changes we make are

- small, and
- concentrate in some carefully chosen parts of the text

Change of type 1

$$\forall \varepsilon \; \exists N : \forall n > N \; |a_n - a| < \varepsilon$$

$$\exists \varepsilon \; \forall N : \exists n > N \; |a_n - a| < \varepsilon$$

Change of type 2

$$\forall \varepsilon \; \exists N : \forall n > N \; |a_n - a| < \varepsilon$$

$$\forall \varepsilon \; \exists N : \forall n \not< N \; |a_n - a| \not> \varepsilon$$

Creating an MCQ using Blackwater

$$\forall \varepsilon \; \exists N : \forall n > N \; |a_n - a| < \varepsilon$$

$$\exists \varepsilon \; \forall N : \exists n > N \; |a_n - a| < \varepsilon$$

and/or

$$\forall \varepsilon \; \exists N : \forall n < N \; |a_n - a| > \varepsilon$$

Example 1

$2 + 2 = 4$

Or perhaps 2+2 is a different number?

Answer text

$2 + 2 = 4$

Answer text

$2 + 2 = „1 1 „ 2 „ 3 „ 4 „ 5 „.$

Which one is correct?

Select one:

1. $2 + 2 = 4$
2. $2 + 2 = 2$
3. $2 + 2 = 1$
4. $2 + 2 = 3$

$(x - y)^2 = x^2 + y^2 - 2 xy$

- Change of type 1: vary where 2s are in the answer
  - That is, either in front of x^2, y^2 or in front of xy
- Changge of type 2: vary where the minuses are in the answer
  - That is, either in front of y^2 or in front of xy

,,1 ,, 2 ,,. x^2 ,,2 + ,, - ,,. ,,1 ,, 2 ,,. y^2 ,,2 - ,, + ,,. ,,1 2 ,, ,,. xy

- Change of type 1 (in front of x^2 and y^2)
  - Correct option: empty
  - Incorrect option: coefficient 2

- Change of type 1 (in front of xy)
  - Correct option: coefficient 2
  - Incorrect option: empty

,,1 ,, 2 ,,. x^2 ,,2 + ,, - ,,. ,,1 ,, 2 ,,. y^2 ,,2 - ,, + ,,. ,,1 2 ,, ,,. xy

- Change of type 2 (in front of y^2)
  - Correct option: +
  - Incorrect option: -

- Change of type 2 (in front of xy)
  - Correct option: -
  - Incorrect option: +

Answer text

$(x - y)^2 = „1 „ 2 „. x^2 „2 + „ - „. „1 „ 2 „. y^2 „2 - „ + „. „1 2 „ „. xy$

Which one is correct?

Select one:

1. $(x-y)^2 = x^2 - y^2 + 2xy$
2. $(x-y)^2 = x^2 + y^2 - 2xy$
3. $(x-y)^2 = 2x^2 + 2y^2 - xy$
4. $(x-y)^2 = 2x^2 - 2y^2 + xy$