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The use of Assertion Reason Questions to promote higher order thinking in GEN

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Background

- ▶ GEN challenge the traditional methods of learning and teaching in nurse education (Koch et al 2011)
- ▶ GEN students need a curriculum that is challenging and stimulating (Halkett and Mcafferty (2006)
- ▶ GEN students need a curriculum that promotes higher order thinking – (McGarry et al 2011)
- ▶ GEN students need a curriculum that challenge them to reach their full potential (Cangelosi 2007)

Can ARQs enhance the development of critical thinking in postgraduate pre-registration nursing students?

- ▶ Knowledge of applied life sciences in undergraduate pre-registration nursing programmes within the department is normally assessed by Multiple Choice Questionnaires and short answer questions.
- ▶ These methods of assessment have been criticised in the literature for their limited capacity to represent real world situations authentically and promote higher order thinking.
- ▶ Assertion-Reason Questions (ARQs) are promoted in the literature as an alternative approach which encourages higher order thinking and promotes deep learning.
- ▶ The PG Diploma with Professional Registration in Nursing team were seeking an approach to closed examinations that enhances learners' critical thinking and promotes deep learning

ARQ Project

- ▶ To adopt ARQs as the method of formative and summative assessment of applied life sciences to enhance the critical thinking of learners engaged in the programme and promote deep learning associated with a post graduate level of study.
- ▶ Evaluation through
 - analysis of results
 - post assessment survey of students

What are ARQs?

- ▶ An assertion–reason question combines the elements of multiple–choice and true/false question types
- ▶ This allows for the testing of more complicated issues and requires a higher level of learning
- ▶ Assertion–reason questions can be used to explore cause and effect and identify relationships

The ARQ Format

- ▶ The question consists of two statements: an assertion and a reason
- ▶ The student must first determine whether each statement is true, then determine whether the reasons correctly explains the assertion
- ▶ There is one option for each possible outcome

ARQ Layout

Q Topic		
Assertion		Reason
		because
Circle the correct option		
A	Both assertion and reason are true, and reason is the correct explanation for assertion	
B	Both assertion and reason are true, and reason is not a correct explanation for assertion	
C	A is true , R false	
D	A is false, R is true	
E	A is false, R is false	

First step in solving an ARQ

- ▶ Read both sentences to see if they are correct or incorrect.
- ▶ If you identify an incorrect statement options A&B can be excluded so only the last 3 options need to be considered
- ▶ If the assertion is wrong – choose option C
- ▶ If the reason is wrong – choose option D
- ▶ If both the assertion and the reason are wrong – choose option E

Second Step in solving an ARQ

- ▶ If both the assertion and the reason statements are correct then you need to choose between option A and B.
- ▶ This is the most confusing part for students.
- ▶ One way to think of it –
“assertion statement” is true because “reason statement”
- ▶ If this makes sense then option A is correct
- ▶ If not, then its option B.
- ▶ It can help to write the statements out.

ARQ Example: non-clinical

Q2 History

Assertion

The steam engine was invented by James Watt

because

Reason

There was a problem getting water out of flooded mines

Circle the correct option

- | | |
|---|---|
| A | Both assertion and reason are true, and reason is the correct explanation for assertion |
| B | Both assertion and reason are true, and reason is not a correct explanation for assertion |
| C | A is true , R false |
| D | A is false, R is true |
| E | A is false, R is false |

ARQ Example – clinical

Q1 Integumentary System		
Assertion		Reason
The most abundant cells in the epidermis are keratinocytes.	because	The papillary layer provides nutrients to the lower layers of the epidermis.
Circle the correct option		
A	Both assertion and reason are true, and reason is the correct explanation for assertion	
B	Both assertion and reason are true, and reason is not a correct explanation for assertion	
C	A is true , R false	
D	A is false, R is true	
E	A is false, R is false	

Summary of key features

- ▶ ARQs test 2 facts and the relationship between them.
- ▶ ARQs cover a lot of content in a single question
- ▶ ARQs aim to promote higher level thinking by testing understanding as well as knowledge

Our tentative findings

- ▶ ARQs have a good backwash effect
 - i.e. they promote active study
- ▶ ARQs promote higher order thinking
 - success rate in exam was high
- ▶ ARQs challenging but efficient to write
 - same stem for 5 responses
- ▶ Students perception of benefits?
 - Awaiting results of survey.

Thank-you

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