UNIVERSITY OF JOHANNESBURG

FACULTY OF EDUCATION

DECEMBER

SUPPLEMENTARY EXAMINATION 2015

PROGRAMME: B Ed (FET)

MODULE: Learning Area Methodology 4A/B Life Sciences

CODE: XLS0000/XLS0001/MPFLSY1

TIME: 3 hours

MARKS: 100

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MODERATOR: PROF. JJR DE VILLIERS (UP)

(This paper consists of 3 pages)

INSTRUCTIONS

Read the following instructions carefully before answering the questions.

1. This question paper consists of two (2) questions, each based on a case scenario.

2. Answer all questions.

QUESTION 1: Case 1

A number of researchers have embarked on research to determine how learners learn. Their findings have led to the development of teaching and learning theories that show that learning through multimedia resources improves learners' content understanding.

1.1 Discuss how learning takes place according to the 'cognitive theory of multimedia learning'. You may use a diagram to explain your reasoning. (10)

Based on research findings, science teachers around the world are adopting the use of multimedia resources, such as smart boards, in their teaching. This is done to accommodate learners with various learning styles, including visual and auditory learning styles.

1.2 What is the difference between visual and auditory learning styles? (6)

Life Sciences teachers who have moved from traditional teaching methods to technology-based teaching do so following thorough reflection. Reflection can be defined as a cognitive process that involves a deliberate pause to examine beliefs, goals or practices in order to gain new or deeper understanding that leads to actions improving the learning of students.

1.3 Discuss the main processes involved in the DATA method of reflection. (5)

Reflection may involve analysis of students' result following an assessment. However, it is recommended that Life Sciences teachers should have a well-planned assessment phase in every lesson. Self-assessment, peer assessment, group assessment and teacher assessment are four (4) commonly used methods of assessment in a Life Sciences classroom.

1.4 Discuss how self-assessment, peer assessment, group assessment and teacher assessment could be integrated in practical activities in Life Sciences. (16)

Some teachers choose to base their teaching strategies on research rather than on intuition or reflection alone.

1.5 Why is research significant in Life Sciences? (3)
1.6 Briefly describe how research is done. (10)

QUESTION 2: Case 2

The Life Sciences curriculum requires teachers to present content on cloning of plant and animal tissues and stem cell research. A number of teachers are however reluctant as their moral and ethical beliefs go against teaching such content.

2.1 Define morality. (2)

2.2 What is the 'affective domain'? (2)

2.3 Why do we need to integrate the affective domain in the science classroom? (8)

Cloning and evolution are some of the most controversial topics in Life Sciences. Teachers, learners and parents who oppose the teaching of controversial issues in Life Science argue that such content is not 'real' science.

2.4 Discuss the nature of science? (10)

Some people believe that indigenous knowledge is not a 'real science'. They base their reasoning on the manner in which scientific knowledge is derived.

2.5 State whether the following statements are true or false:

a) Science is a systematic enterprise that builds and organizes knowledge in the form of testable explanations. (2)

b) Indigenous knowledge is made up purely of a body of knowledge that can be rationally explained and reliably applied. (2)

c) Indigenous knowledge is embedded in the cultural traditions of regional communities. (2)

2.6 Using a basic lesson plan, discuss how you could integrate indigenous knowledge into a Life Sciences lesson. (10)

Some forms of indigenous knowledge can lead to the development of misconceptions amongst learners.

2.7 Discuss the advantages and disadvantages of using **multiple choice items** and **concept maps** for identifying misconceptions. (12)

TOTAL: 100

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