



<u>FACULTY</u>	: Education
<u>DEPARTMENT</u>	: Childhood Education
<u>CAMPUS</u>	: SWC
<u>MODULE</u>	LEARNING IN THE PRIMARY SCHOOL: MATHEMATICS AND SCIENCE (HLMS00Y)
<u>SEMESTER</u>	: Second
<u>EXAM</u>	: January 2021

ASSESSOR(S) : MR E LIBUSHA
: MRS M PENN

MODERATOR : DR C COETZEE (UP)

DURATION : Take-home Exam **MARKS** : 100

NUMBER OF PAGES: 4 PAGES

INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
 2. Number your answers clearly.
 3. This paper will be released on blackboard in the assessment folder 72 hours before the due date of submission.
 4. Your work should be typed in Times New Romans/Arial font, 1.5 spacing and must include a cover page with your details.
 5. A declaration of authenticity must be submitted with your exam submission.
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QUESTION 1: Trends in science education research

Several curriculum reforms in science education in the 1950s-1980s were centred on societal and technological developments and how these influenced teaching and learning.

- 1.1 Discuss the prominent events of the first and second waves of curriculum reforms in science education. (10)
- 1.2 With your knowledge of research trends in science education and the current impact of the covid-19 pandemic on education, select two (2) prominent areas of science education research from the list below and expatiate using literature how these areas of research will address the issues affecting education in this pandemic.
- Technology enhanced teaching and learning
 - Online teaching and learning
 - Blended learning for primary and high schools
 - Technology infused curriculum reforms
 - The home schooling fraternity
 - Self-directed learning.
 - Virtual laboratories and science practical work
- (20)
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- [30]

Question 2: Approaches to assessment

Some of the biggest challenges in assessments include issues of validity, Reliability, fairness and practicality

- 2.1 In a comprehensive essay of two (2) pages excluding references, critically analyse the relevance of ensuring that assessments in science education are valid and reliable. (20)
- [20]

**** The rubric below provide the general guideline for the essay type questions of 20 marks in 1.2 and 2.1.**

Rubric

Criteria	5 points	4 points	3 points	2 points	1 point
Content: Evidence of content knowledge. Providing majority of the expected concepts and ideas, using diagrams where relevant.	Extensive Evidence	Much Evidence	Sufficient Evidence	Some Evidence	Little Evidence
Credibility: Used a variety well cited of sources to outsource relevant ideas, backing with examples where necessary.	Extensive Evidence	Much Evidence	Sufficient Evidence	Some Evidence	Little Evidence
Evidence of critical thinking and sound argumentation: Information and ideas carefully organized and nicely presented arguments; information flows logically and well	Extensive Evidence	Much Evidence	Sufficient Evidence	Some Evidence	Little Evidence
Grammar, writing and Referencing: Spelling and grammar are correct; material has been proofread and edited; student uses a correct and consistent referencing style.	Extensive Evidence	Much Evidence	Sufficient Evidence	Some Evidence	Little Evidence

Question 3: Maths

Part of learning Mathematics is gaining control over the language of Mathematics so that one is able to communicate Mathematics related concepts with fluency and understanding (Pimm, 1991). However, the language of mathematics is taught in English in South Africa and Setati (2001) ascertain that the English language should not be learnt at the cost of Mathematics. In a Mathematics classroom learners should be learning Mathematics, and if learners are struggling to understand English, the access to English should not become the main issue. Learners are supposed to be accessing Mathematics and not worry about English.

- 3.1 Write a page long argumentative essay in which you argue for the statement or against the statement that says “**Learners are supposed to be accessing Mathematics and not worry about English**”. If you agree with this statement, then you argue for the statement. You will therefore state that you agree with the statement and argue/discuss why you agree with the statement. If you disagree with the statement, then you argue against the statement. You will therefore also state why you disagree and argue/discuss why you disagree with the statement. You may use the content and reading materials used during the course and other reputable sources but you should acknowledge the sources. (Use the rubric below as a guide)

30

[30]

QUESTION 4: Maths...

Xolani solved the addition of fractions problems in the following way:

$$\frac{3}{5} + \frac{2}{3}$$
$$= \frac{3+2}{5+3} = \frac{5}{8}$$

4.1 Evaluate what problem Xolani has and what the correct answer is (2)

4.2 Differentiate between errors and misconceptions and use the above scenario (Xolani's scenario) to extract mathematical example of each and critically evaluate why you think it is important for Xolani's teacher to address this mathematical problem for further concept development making reference to the pedagogic content knowledge and also give an example on how you will be able to address this problem using any reputable sources but you should acknowledge the sources. Your discussion should be a page long.

(18)

Differentiate between errors and misconceptions	2
Example of each	2
Evaluation of the importance	4
Making reference to pck	2
How to address the problem with the use of literature	4
referencing	2
Style of writing and use of own words	2

[20]

TOTAL: 100

Argumentative Essay Rubric				
Categories and criteria each worth 10 points	4 marks	3 marks	2 marks	1 mark
Use and evaluation of sources	Utilizes three sources (at least one print source). Sources are reputable.	Utilizes three sources (all are online). Sources aren't quite reputable and/or aren't quite fitting for the topic.	Utilizes two sources. Sources are basically irrelevant and aren't acceptable.	Doesn't use sources.
Audience, Tone & Rhetorical Appeals	All the reasons are written to convince the appropriate audience. Purpose has been achieved. Tone is consistent and convincing.	Some of the writing would concern or appeal to the intended audience. At times, the focus wanders from the intended audience. Tone is inconsistent at times.	Very little of the article contains reasons that would concern or appeal to the intended audience.	None of the article contains arguments and/or reasons that address the intended audience.
Organization	Arguments are organized logically and coherently.	At times, the argument is not logically organized and/or the evidence doesn't support the claims	Very little of the essay is well organized. Claims are not supported by evidence.	Arguments are illogically organized and incoherent.
Claims, Warrants, and Support	Writing addresses assumptions, makes at least three smaller claims re: the major argument, and provides support for every claim.	One or more claim is lacking support and the writer doesn't clearly address assumptions.	Writing doesn't address assumptions, makes only two or fewer claims re: the major argument and/or doesn't provide support.	Writing only makes one major claim and doesn't address any assumptions.
Paraphrase, Direct Quotation and Summary	Writing contains a balanced and successful mix of paraphrase, direct quote, and summary.	Writing only contains two of the three and/or paraphrase and/or summary are done incorrectly.	Writing only contains one of the three or they are done incorrectly.	Writing lacks all three.
Mechanics	Uses all correct grammar and spelling throughout. Sentence variety and word choices are outstanding. Doesn't use "I" or first person POV(Point of View), except in sections of personal narrative.	Uses mostly correct grammar and spelling. Some attempt at variety in words choice or sentence variety. Doesn't use "I" or first person POV, except in sections of personal narrative.	Several grammar and spelling mistakes. Words choices are simple; sentences lack variety. Uses "I" or first person POV sparingly.	Many grammar and spelling mistakes. Word choices are weak and sentence variety is non-existent. Is written from first person POV.
In-text citations and Reference List	Using MLA format, correctly cites all sources used on the works cited page.	Using MLA format, correctly cites all sources on the	Incorrectly cites sources on the works cited page and doesn't	Doesn't cite sources used or doesn't use sources.