FACULTY	:	Education
DEPARTMENT	:	Childhood Education
CAMPUS	:	SWC
MODULE	:	LEARNING IN THE PRIMARY SCHOOL: MATHEMATICS AND SCIENCE (HLMS00Y)
SEMESTER	:	Second
EXAM DUE DATE	:	26 October 2020

ASSESSOR(S)	:	MR E LIBUSHA		
	:	MRS M PENN		
MODERATOR	:	DR C COETZEE (UP)		
DURATION	:	14 days (two weeks)	**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.

QUESTION 1: Learning and Development of science concepts

Concepts are defined as abstract ideas or general notions that occur in the mind, in speech, or in thought. They are understood to be the fundamental building blocks of thoughts and beliefs. They play an important role in all aspects of cognition (Carey, 1991)

1.1 In your own words define conceptual change **(2)**

1.2 Describe four (4) conditions necessary for conceptual change. **(8)**

1.3 Using sound literature on science concept formation critically analyse four (4) Barriers to science concept formation. **(20)**

[30]

Question 2: Critical issues of the National Curriculum

Some of the fundamental issues with implementing the Curriculum and Assessment Policy Statement (CAPS) for Natural Sciences and Technology, in school science are centred on specific aim 2 and 3 of the curriculum.

2.1 In a comprehensive essay of two (2) pages excluding references, discuss how the inclusion of the nature of science (NoS) and scientific inquiry address issues related to the afore-mentioned aims. **(20)**

[20]

**** The rubric below provide the general guideline for the essay type questions of 20 marks in 1.3 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: Mathematics

Mathematics leaves no room for mistakes because one mistake made can lead into an incorrect answer when solving mathematical problem. However, a good instructional program will have to predict errors and purposely allow for them in the process of learning.

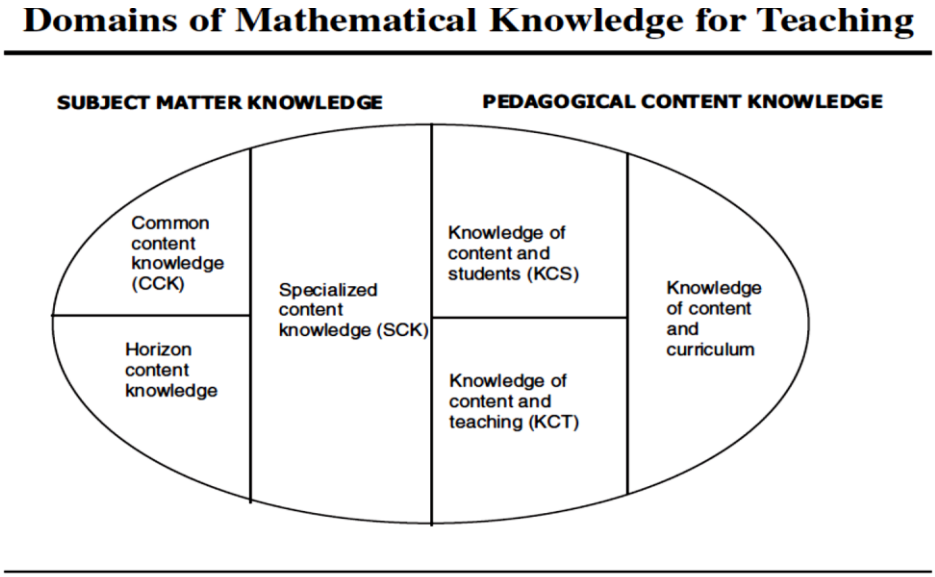
3.1 Write a 1 page long argumentative essay in which you argue for the statement or against the statement. If you agree with this statement, then you argue for the statement. You will therefore state that you agree with the statement and argue/discuss why you agree with the statement. If you disagree 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: Mathematics

Apart from content knowledge and pedagogical content knowledge needed to teach mathematics, teachers also need other domains of knowledge. Explain what are the knowledge domains needed to teach a lesson *'multiplication of multi-digit whole numbers'* by using the Mathematical Knowledge for Teaching (MKT), framework to analyse this knowledge domains (Ball, Thames & Phelps, 2008).



4.1 In your own words, explain what each of the domains mean in this framework and then apply each of these knowledge domains in terms of the above mentioned task on *'multiplication of multi-digit whole numbers*'. Give a detailed description. **(20)**

Explanation of each domain	1 x 6
Correct application of each domain Used in proper context	1 x 6 1 x 6
Own words	2

[20]

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.
Own words			Writing has no cut and paste but student uses their own words	Writing has a lot of cut and paste

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