



UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
NOVEMBER EXAMINATION 2015

PROGRAMME: MEd (COURSEWORK)
MODULE: MATHEMATICS LEARNING AND TEACHING
CODE: MSL9X20
TIME: Submission (Examination Equivalent)
MARKS: 100
EXAMINER: Dr ED Spangenberg
MODERATOR: Prof G Stols (University of Pretoria)

(This paper consists of four pages)

INSTRUCTIONS

Read the following instructions carefully before answering the question:

1. The examination submission is a formal examination and the same rules apply.
2. You must be at the venue at the start of the session and will (as is the case with a written examination) not be allowed into the venue if you are more than 30 minutes late for the session.
3. You will complete a plagiarism declaration and attendance slip in the venue and then submit the examination equivalent.
4. The literature research essay must be typed, using 1½ spacing, 12 pt. Arial.
5. Margins should be set on 2,5 cm (not inches)
6. Staple the loose pages at top left corner.
7. Do not use files, hard covers or plastic sleeves.
8. Provide your surname, initials, student number and date of submission on the cover page.
9. The length requirement will be applied strictly. Make sure that your literature research essay falls within the range provided. Also provide a word count on your literature research essay.
10. Referencing must be done in accordance with a consistent style.

QUESTION 1

Write an academic essay of 2500 – 3000 words in which you critically reflect on the following task and then ending by drawing up a model for mathematical knowledge for teaching:

Lee Schulman (1986) conceptualized pedagogical content knowledge (PCK) as a unique domain of teacher knowledge covering various aspects of subject knowledge of mathematics that are relevant for teaching

(100)

The following guidelines should be used to write the research essay:

1. A good understanding of the concepts embedded in pedagogical content knowledge (PCK) as developed by Lee Schulman (1986) is crucial for this essay. You also have to use other thoughts from scholars, such as Ball et al (1991), Fennema and Franke (1992), Eisenhart (1993), Cochran et al. (1993), An, Kulm and Wu (2004); Rowland et al. (2005), Krauss et al. (2008), Hill et al. (2008) and Depaepe et al. (2013), to deepen your understanding of these concepts.
2. You need to consult at least ten academic texts.
3. You need to define PCK in Mathematics from your own understanding based on literature evidence and discuss its implications for the teaching of Mathematics.
4. You have to draw-up your own model for mathematical knowledge for teaching based on theory.

TOTAL: 100

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ASSESSMENT CRITERIA

- Response to and focus on the question.
- An understanding of PCK and relevant concepts embedded in PCK.
- Use of the prescribed texts.
- Selection and use of other texts.
- An own description of what PCK is and the implications it has for your teaching of Mathematics.
- Draw-up of a model for mathematical knowledge for teaching.
- Argumentation and coherence
- Technical requirements of academic essay writing such as referencing.

The following rubric will be used to assess the research essay:

Criteria	Level 1	Level 2	Level 3	Level 4	Marks
Introduction	-weak introduction of topic -thesis is weak and lacks an arguable position	-adequate introduction that states topic , thesis and some of the subtopics - thesis is somewhat clear and arguable	-proficient introduction that states background information, controversial question, topic, thesis, and all subtopics in proper order - thesis is a clear and arguable statement of position	-exceptional introduction that grabs interest of reader and states background information, controversial question, topic, thesis, and all subtopics in proper order - thesis is exceptionally clear, arguable, well developed, and a definitive statement	/8 (levelx2)
Quality of Information	-limited information on topic or inaccurate information	Some accurate information but still inadequate	Detailed information with accurate	extremely detailed and accurate	/12 (Levelx3)
Support of Ideas / Evidence / Analysis	-limited connections made between evidence, arguments and counter-arguments -lack of analysis	-some connections made between evidence, arguments and counter-arguments -showing analysis	-critical evidence -consistent connections made between evidence, arguments and counter-arguments -showing good analysis	- with critical evidence from a variety of sources -exceptionally critical, relevant and consistent connections made between evidence, arguments and counter-arguments -showing excellent analysis	/12 (Levelx3)
Organization /	-paper lacks clear and logical development of	-somewhat clear and logical development of subtopics with	-clear and logical subtopic order that supports thesis with	-exceptionally clear, logical, mature, and thorough	/10 (Levelx2.5)

Development of Ideas	ideas with weak transition b/w ideas and paragraphs	adequate transitions b/w paragraphs	good transitions b/w paragraphs	development of subtopics that support thesis with excellent transition b/w paragraphs	
Conclusion	-lack of summary of topic, with weak concluding ideas	-adequate summary of topic, with some final concluding ideas	-good summary of topic, with clear concluding ideas	-excellent summary of topic (with no new information), in proper order with concluding ideas that leave an impact on reader	/4 (Levelx1)
Language Conventions	- inconsistent grammar, spelling and paragraphing throughout paper -in-text citations and reference list are done incorrectly	-paper has some errors in grammar, spelling and paragraphing -Some errors in in-text citations and reference list	-paper is clear, with mostly proper grammar, spelling and paragraphing -Correct in-text citations and reference list	-paper is very concise, clear, with consistently proper grammar, spelling, paragraphing and citing	/4 (Levelx1)
SUB-TOTAL					/50
Below 20	<ul style="list-style-type: none">• Question is not addressed at all• No, or very limited understanding of the texts• Ideas are not clearly articulated• No relevant argument is presented• Writing is incoherent				
20-24	<ul style="list-style-type: none">• Inadequate/very limited understanding of the question• Ideas are not clearly articulated• Prescribed texts are not adequately understood and used in the argument• An own response to the question not explicitly developed				
25-29	<ul style="list-style-type: none">• A basically sound but limited interpretation of the question• A basic argument is present• A basically sound, but limited use of the prescribed texts• Basic elements of essay writing is present				
30-34	<ul style="list-style-type: none">• A good interpretation of the question• An argument is explicitly and coherently developed• Good interpretation and use of the prescribed texts• Other texts are appropriately identified and integrated in the argument (33 +)• A sound but somewhat limited analysis of mathematics teaching and learning				
34-37	<ul style="list-style-type: none">• One to three of the criteria below are not met				
38 +	<ul style="list-style-type: none">• An insightful and original interpretation of the question• An own view is strongly and explicitly expressed• An own argument is coherently and consistently developed• Ideas are clearly articulated• Arguments from the prescribed texts are well understood and engaged with• Prescribed texts are used as the context of the problematic and of the possible solutions• Other texts are appropriately selected and integrated in the argument• A contextualisation of issues within the own field of expertise• All technical requirements are met				
SUB-TOTAL					/50
TOTAL					/100

TOTAL: 100

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