



<b><u>FACULTY</u></b>	: Education
<b><u>DEPARTMENT</u></b>	: Science and Technology Education
<b><u>CAMPUS</u></b>	: APK
<b><u>MODULE</u></b>	: RESEARCH PROJECT: MATHEMATICS EDUCATION (HRRMEOY)
<b><u>SEMESTER</u></b>	: Second
<b><u>EXAM</u></b>	: November 2020

**ASSESSOR(S)** : DR ED SPANGENBERG

Dr V RAMDHANY

PROF M NDLOVU

**MODERATOR** : DR LS VAN PUTTEN (UP)

**DURATION** : SUBMISSION **MARKS** : 100

---

NUMBER OF PAGES: 4 PAGES

INSTRUCTIONS:

1. Write a research report on one of the following areas/topics:

- *The mindset of teachers pertaining to the teaching of specified mathematics topics.*
  - *An investigation of mathematics teachers' pedagogical and assessment practices at selected high schools in Gauteng.*
  - *The use of technology to teach mathematics at schools.*
-

The research project should include the following:

- Assessment rubric
- Cover page
- Table of contents
- Abstract
- List of abbreviations
- Acknowledgement
- Text
- List of references (An internationally recognised referencing method should be used)
- Appendices (clearly labelled).

The report's language and style should be clear and should be edited before submission. The text should be 30 – 50 pages (9 000 – 15 000 words) and should comply with the following criteria:

<b>SECTION 1: TOPIC, RESEARCH QUESTION AND AIM</b>
The issue that is investigated is clearly stated
The issue is narrowed down and focussed
The reason (rationale/motivation) for investigating the issue is argued clearly
The research question is stated explicitly
The research question links to the research issue
The main purpose (aim) of inquiry is clear
The stated aim links with the research issue and question
<b>SECTION 2: LITERATURE REVIEW</b>
The literature review relates to the research issue/question in Mathematics
The literature review is written in such a way that the relevance of the literature to the research question is made clear
The literature is argued in a logical/coherent manner
Relevant sources are used
<b>SECTION 3: THE RESEARCH DESIGN</b>
The following aspects are addressed and explained:
<ul style="list-style-type: none"> <li>• What make this a qualitative/quantitative study?</li> </ul>
<ul style="list-style-type: none"> <li>• What type of data collection method is used and why?</li> </ul>
<ul style="list-style-type: none"> <li>• How is the sample selected?</li> </ul>
<b>SECTION 4: RESEACH METHODOLOGY</b>
The process of gathering data is described clearly
The data analysis process is described clearly with examples of raw data
The findings (categories/main themes) are (briefly) presented
Measures to ensure ethical conduct

<b>SECTION 5: FINDINGS AND CONCLUSIONS</b>
The findings of the inquiry are discussed with evidence from the data
The findings flow logically from the field study
Conclusions about the findings are drawn

**The following rubric will be used to assess the research project:**

**FINAL RESEARCH REPORT ASSESSMENT RUBRIC**

Name of student: \_\_\_\_\_

Student number: \_\_\_\_\_

<b>1. Abstract</b> – A concise abstract of the proposed research – The background issue/problem of the study – The purpose/aim of the study – The name of the design or a short description – A brief description of the data collection instruments – The sample and/or population – The major results/findings – the value/contribution of the study	<i>Clear and well developed</i>	<i>Needs clarification / or some development</i>	<i>Needs substantial clarification or substantial development</i>	<b>Student mark</b>
	7-8	3-6	0-2	
	The abstract is 250 words or less and presents a concise picture of the proposed research. The major elements of an abstract are included.	The abstract provides a summary of the proposed research. Most of the major elements of an abstract are included.	The abstract is not a summary of the proposed research. Few, if any, of the elements of an abstract are included.	
<b>2. Introduction, problem statement, rationale and research question</b> – The background issue/problem that motivates your study – The rationale and background of the problem – Purpose and focus of your study – Research questions have been included – Objectives are stated – Subtopics (way forward) provided	<i>Clear and well developed</i>	<i>Needs clarification / or some development</i>	<i>Needs substantial clarification or substantial development</i>	
	11-15	6-10	0-5	
	The problem statement clearly identifies the problem, is relevant, specific and focused, and ties up with the title. The research questions are relevant to the project and are well articulated. The major terms are clearly defined. The purpose/aim is aligned with the research question and title and is clear. The objectives are stated and clear. Subtopics (way forward) are in proper order.	The problem statement incompletely identifies the purpose of the project and research questions; the proposal's topic is not clearly related to the project. The research questions need additional attention. Major terms and/or assumptions need clarification. Objectives are not clearly stated. Subtopics (way forward) need ordering.	Problem statement is incomplete and fails to identify a relevant educational issue that is being addressed, research questions have not been included or are poorly articulated. Terms need substantial clarification. Objectives are not stated or poorly articulated. Subtopics (way forward) are not included.	

<b>3. Review of research literature</b> <ul style="list-style-type: none"> <li>The review provides a good cross section of studies that are relevant to the area of your investigation.</li> <li>Literature review summary includes the statements that reiterate the major findings from the review of literature.</li> <li>Sources are recent and sufficient. The study builds on seminal work.</li> </ul>	<i>Clear and well developed</i>	<i>Needs clarification / or some development</i>	<i>Needs substantial clarification or substantial development</i>	
	11-15	6-10	0-5	
	Research literature review provides excellent overview of the educational issue that is being addressed and provides a convincing support for the purpose of the proposed study. Most sources are not older than 5 years and at least 10 sources are utilised. Logical and consistent connections are made with literature. The study builds on theories of seminal works and/or have a conceptual framework. Good 'big picture' holistic view – clear and logical development of subtopics/ideas/logic arguments.	Research literature review provides partial or incomplete overview of the educational issue that is being addressed. The relevance of the reviewed literature to the proposed study is not clear. Many sources are not recent or sufficient. Connections are made with literature, but are not always consistent or logic. The study utilises theories of seminal works or a conceptual framework, but these are inappropriate to the study. The development of subtopics/ideas/arguments are not always clear or logical.	Research literature review inadequately identifies the educational issue that is being addressed and does not provide support for the purpose of the study. None or outdated and insufficient sources are utilised. Connections with literature are not logical and ambiguous. The study does not build on theories of seminal works and/or does not have a conceptual framework. Poor development of subtopics/ideas/arguments.	
<b>4. Research design and methodology</b> <ul style="list-style-type: none"> <li>Philosophic framework</li> <li>Type and rationale for research design selection</li> <li>Research approach, strategy and methods</li> <li>Sampling and participants' characteristics</li> <li>Data collection instruments used</li> <li>Procedures by which data will be collected</li> <li>Procedures by which data will be analysed and interpreted</li> <li>Quality measures</li> </ul>	<i>Clear and well developed</i>	<i>Needs clarification / or some development</i>	<i>Needs substantial clarification or substantial development</i>	
	11-15	6-10	0-5	
	The epistemology, ontology and axiology are outlined and the philosophical framework is clearly discussed. The research design is well developed, and the rationale for the chosen method is clearly identified. The research approach, the research strategy and research methods are clearly explained. Sampling is done satisfactorily and motivated by literature review (research context, population, sample, method). The procedures for data collection are clearly explained (What?) (Who?) (When?) (Where?). Procedures of data analyses are clearly explained and are appropriate for the	The epistemology, ontology and axiology are not outlined or articulated and the philosophical framework are not clearly discussed. The research design is incompletely developed, and/or the rationale for the chosen method is not clear. The research approach, the research strategy and research methods are incompletely explained. Sampling is done and motivated by literature review, but not sufficiently. The procedures for data collection are incompletely explained. Procedures of data analyses are explained, but are not fully appropriate for the study. Not all the quality	The epistemology, ontology and axiology are not addressed and the philosophical framework is poorly or not discussed. Research design and its rationale are poorly (or not at all) developed. Some or none aspects of the research approach, the research strategy and research methods are not explained. Sampling is done unsatisfactory and not motivated by literature review. The procedures for data collection are incompletely or not explained. Procedures of data analyses are not appropriate for the study or not addressed.	

	study. For quantitative research reliability, validity and generalization are addressed. For qualitative research trustworthiness (credibility, transferability, dependability, conformability) are addressed. Ethical measures are taken into consideration.	measures are taken into account for the study.	Quality measures are insufficiently or not taken into account for the study.	
<b>5. Data presentation and analysis</b> <ul style="list-style-type: none"> <li>– Data analysis</li> <li>– Data presentation</li> <li>– Data explanation</li> <li>– Data evidence</li> </ul>	<i>Clear and well developed</i>	<i>Needs clarification / or some development</i>	<i>Needs substantial clarification or substantial development</i>	
	7-10	4-6	0-3	
	Data are analysed using appropriate methods and presented well using appropriate formats, e.g. patterns are identified (codes, categories, themes) for qualitative data and data are presented in graphs and/or tables for quantitative data. Data are explained appropriately. All necessary evidence of data is included in appendices.	Data are analysed using inappropriate methods; and presented well using inappropriate formats. Data are explained inappropriately. Some necessary evidence of data is included in appendices.	Data are not presented; not analysed or presented appropriately. Data are not explained. Insufficient or no evidence of data is included in appendices.	
<b>6. Discussion of findings/results</b> <ul style="list-style-type: none"> <li>– Trends/findings</li> <li>– Data support</li> <li>– Literature control</li> <li>– Interpretation</li> </ul>	<i>Clear and well developed</i>	<i>Needs clarification / or some development</i>	<i>Needs substantial clarification or substantial development</i>	
	11-15	6-10	0-5	
	Trends or findings are clearly provided. Findings are supported with data. The findings are discussed against literature. An appropriate interpretation of the findings are provided.	Trends or findings are provided, but are not always clear. Some findings are supported with data. The findings are discussed against literature inadequately. Findings are interpreted, but not appropriately.	Unclear or no findings are provided. Findings are insufficiently or not supported by data. The findings are not discussed against literature. The findings are wrongly or not interpreted	
<b>7. Conclusion</b> <ul style="list-style-type: none"> <li>– Summary of research study</li> <li>– Reflection on research question and aims</li> <li>– Implications, recommendations and limitations</li> <li>– Contribution of study</li> </ul>	<i>Clear and well developed</i>	<i>Needs clarification / or some development</i>	<i>Needs substantial clarification or substantial development</i>	
	7-8	4-6	0-3	
	A good/excellent summary of the research study is given. Research questions and aims are addressed adequately by provision of relevant and appropriate answer(s) to the	An adequate summary of the research study is given. Research questions and aims are partially addressed by provision of answer(s) to the research question(s). Some	A poor or no summary of the research study is given. Research questions and aims are not addressed adequately by provision of inappropriate or no answer(s) to the research	

	research question(s). Clear implications and recommendations for further research, policy and practice are presented. Limitations are well addressed.	implications and recommendations for further research, policy and practice are presented. Limitations are adequately addressed.	question(s). Inadequate or no implications and recommendations for further research, policy and practice are presented. Limitations are poorly or not addressed.	
<b>8. Referencing</b> – References to the ideas and conclusions of other authors are provided in accordance with the ethical norms of the academic writing – Plagiarism	<i>Acceptable</i>	<i>Need editing</i>	<i>Unacceptable</i>	
	7-10	4-6	0-3	
	Citations and referencing comply with the requirements. In-text referencing is correct. At least 25 references are used. The reference list is in alphabetical order and correct. No sign of plagiarism is evident.	The referencing and citations are not always adequate to the requirements. In-text referencing is almost correct. Fifteen to 25 references are used. The reference list is in alphabetical order and almost correct. A small percentage of unintentional plagiarism is evident.	The citations and referencing are inadequate to the requirements. In-text referencing is incorrect. Less than 15 references are used. The reference list is either not in alphabetical order or incorrect. Much plagiarism is evident.	
<b>9. Technical aspects</b> – Academic writing skills, grammar and coherence – Editing – Presentation – Relevance	<i>Acceptable</i>	<i>Need editing</i>	<i>Unacceptable</i>	
	4	2-3	0-1	
	Writing is appropriate—clear, concise, and focused, with the use of logical transitions, conventional grammar and punctuation. Paragraphs are well planned. Well-edited, neat report without any spelling or grammar mistakes. Well-presented (e.g. ring-bind). All sections, sub-sections and other information in correct order. The information in the research project is of exceptional quality and the findings are relevant to needs in South Africa.	Grammar is acceptance, yet not coherent. Writing needs some editing to comply. Typos and some grammar mistakes. Adequately presented. Most sections, sub-sections and other information in correct order. The information in the research project is of adequate quality and some findings are relevant to needs in South Africa.	Writing is unacceptable. Not edited, too many grammar errors. Poorly presented (e.g. ring-bind). Sections, sub-sections and other information in incorrect order. The information in the research project is of poor quality and the findings are not relevant to needs in South Africa.	
			<b>Grand total</b>	