



**UNIVERSITY OF JOHANNESBURG**  
**FACULTY OF EDUCATION**  
**NOVEMBER / DECEMBER**  
**SUPPLEMENTARY EXAMINATION 2014**

**PROGRAMME:** B Ed (Hons) SCIENCE EDUCATION (BED047)  
**MODULE:** SCIENCE EDUCATION: PEDAGOGICAL CONTENT KNOWLEDGE  
**CODE:** SED0017  
**TIME:** 3 hours  
**MARKS:** 100  
**EXAMINERS:** Prof J de Beer  
 Prof U Ramnarain  
**MODERATOR:** Dr N Petersen (NWU – POTCHEFSTROOM CAMPUS)  
 (This paper consists of 3 pages)

**INSTRUCTIONS**

This paper consists of one question, that requires an in-depth discussion of pedagogical content knowledge. Use the headings provided, to structure your answer. Your essay should be 8 to 12 written pages.

**Rubric**

| Criteria                          | Level 1   | Level 2   | Level 3   | Level 4  | Marks            |
|-----------------------------------|---|---|---|--|------------------|
| Introduction                      | -weak introduction of topic<br>-thesis is weak and lacks an arguable position | -adequate introduction that states topic, thesis and some of the subtopics<br>- thesis is somewhat clear and arguable | -proficient introduction that states background information, controversial question, topic, thesis, and all subtopics in proper order<br>- 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<br>- thesis is exceptionally clear, arguable, well developed, and a definitive statement | /16<br>(levelx4) |
| Quality of Information / Evidence | -limited information on topic or inaccurate information                       | Some accurate evidence but still inadequate   | Detailed information with accurate & critical evidence  | extremely detailed and accurate with critical evidence from a variety of sources   | /24<br>(Levelx6) |
| Support of Ideas / Analysis       | -limited connections made between evidence,                                   | -some connections made between evidence,  | -consistent connections made between evidence,  | -exceptionally critical, relevant and consistent connections   | /24<br>(Levelx6) |

|                                     |   |   |   |   |               |
|-------------------------------------|---|---|---|---|---------------|
|                                     | arguments and counter-arguments<br>-lack of analysis  | arguments and counter-arguments<br>-showing analysis  | arguments and counter-arguments<br>-showing good analysis                                   | made between evidence, arguments and counter-arguments<br>-showing excellent analysis   |               |
| Organization / Development of Ideas | -paper lacks clear and logical development of ideas with weak transition b/w ideas and paragraphs | -somewhat clear and logical development of subtopics with adequate transitions b/w paragraphs | -clear and logical subtopic order that supports thesis with good transitions b/w paragraphs | -exceptionally clear, logical, mature, and thorough development of subtopics that support thesis with excellent transition b/w paragraphs | /20 (Levelx5) |
| 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               | /8 (Levelx2)  |
| Language Conventions                | - inconsistent grammar, spelling and paragraphing throughout paper                                | -paper has some errors in grammar, spelling and paragraphing                                  | -paper is clear, with mostly proper grammar, spelling and paragraphing                      | -paper is very concise, clear, with consistently proper grammar, spelling and paragraphing  | /8 (Levelx2)  |
| TOTAL                               |   |   |   |   | /100          |

## QUESTION 1

Lee Shulman advanced our thinking about teacher knowledge by introducing the idea of pedagogical content knowledge. This notion of PCK has been critiqued and extended by scholars such as Loughran, Gunstone, Berry, Milroy and Mulhall. Although Shulman did not discuss technology and its relationship to pedagogy and content, these are important aspects, and in the literature today there are many references to work being done on Technological Pedagogical Knowledge (TPK) and Technological Pedagogical Content Knowledge (TPCK).

Write an essay of 8 to 12 pages, in which you discuss teachers' PCK under the following headings:

1. Shulman's (1986) notion of Pedagogical Content Knowledge (PCK)
2. Facets of PCK
3. Pedagogical Professional-experience Repertoire (PaP-eR)
4. Content Representations (CoRes)
5. Carlson & Gardner's CK, PK & CxK
6. TPCK
7. The critical role of reflection in developing PCK

8. Schön's (1983) categorization of reflection
9. Tools to guide reflection (e.g. DATA process and Guided Reflection Protocol)
10. Reflection, PCK and professional development
11. The challenges we face in South Africa in assisting teachers in their professional growth and PCK development.

**TOTAL: 100**

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