

# Standards of South African Senior Certificate Biology Examinations: 1994 to 2007

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PhD 2012

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# Senior Certificate (SC) examinations

- matriculation examinations
- end of Grade 12 year
- claim to certify students competent to enter the workforce / qualify for tertiary study
- different school subjects - some subjects are compulsory, others like Biology are not

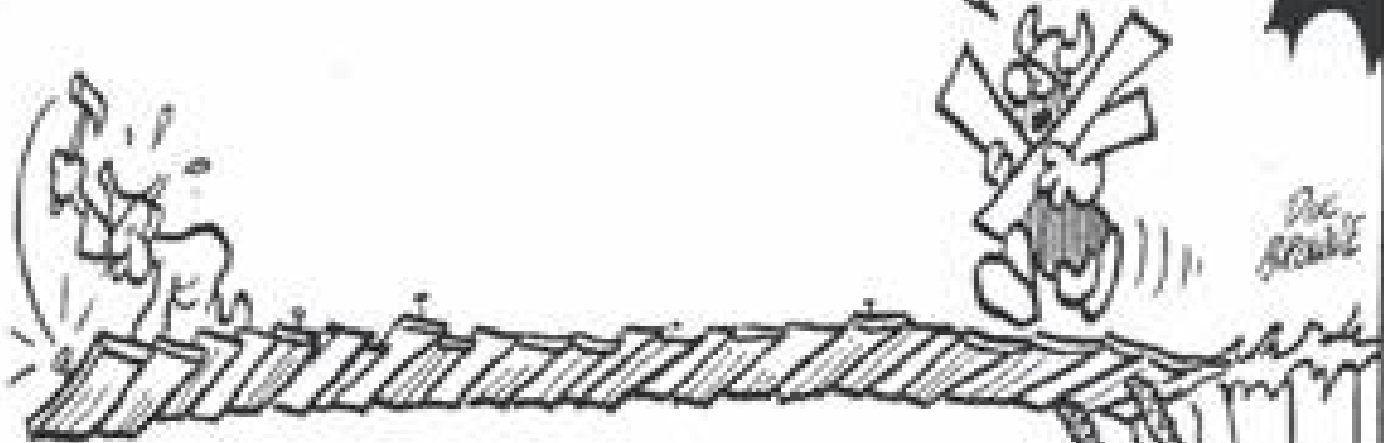
## **RESEARCH QUESTION**

What did the SC Biology examinations in South Africa assess; did their focus change during the period 1994 to 2007; and, if so, what did this change mean?



**Research  
Question**

NEVER MIND WHAT'S HOLDING IT UP! KEEP HAMMERING!!



# SOURCES OF EVIDENCE

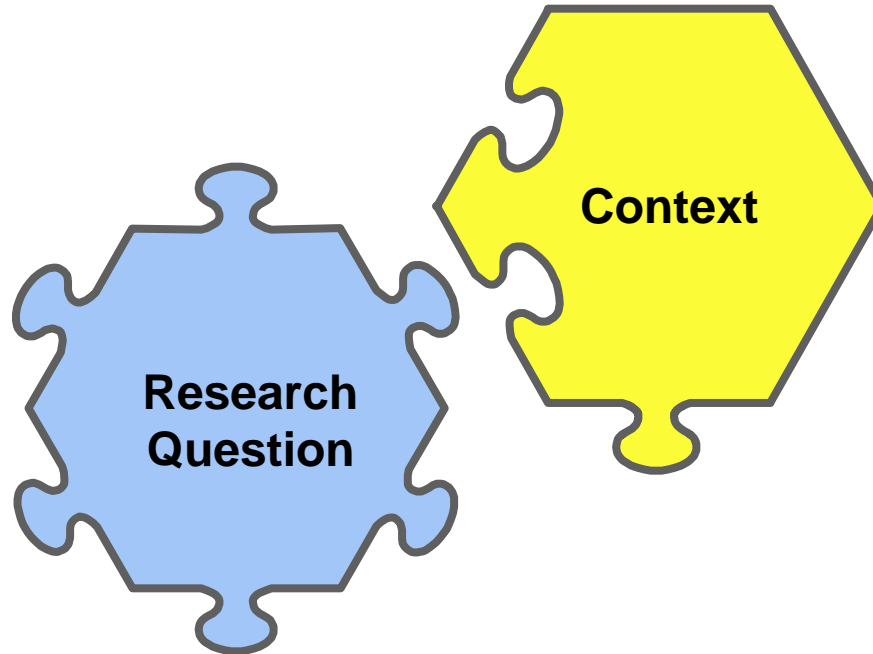
- policies
- examination question papers
- candidates' answer scripts
- candidates scores

Little/no evidence exists of what the SC examination question papers, answer scripts and students' scores mean or how they relate to each other

Where do we start to look for that meaning?



# The particular South African context



- each year SC question papers are set by different examining authorities
- one aggregate mark
- same cut-scores separating categories of performance each year
- same cut-scores for different subjects
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### *ASSUMPTIONS:*

- equivalence between examining authorities and between years
- cut-scores were independent of the content of the question papers

In a standards-based curriculum standards provide the framework to understand the examinations and students performances and to make comparisons

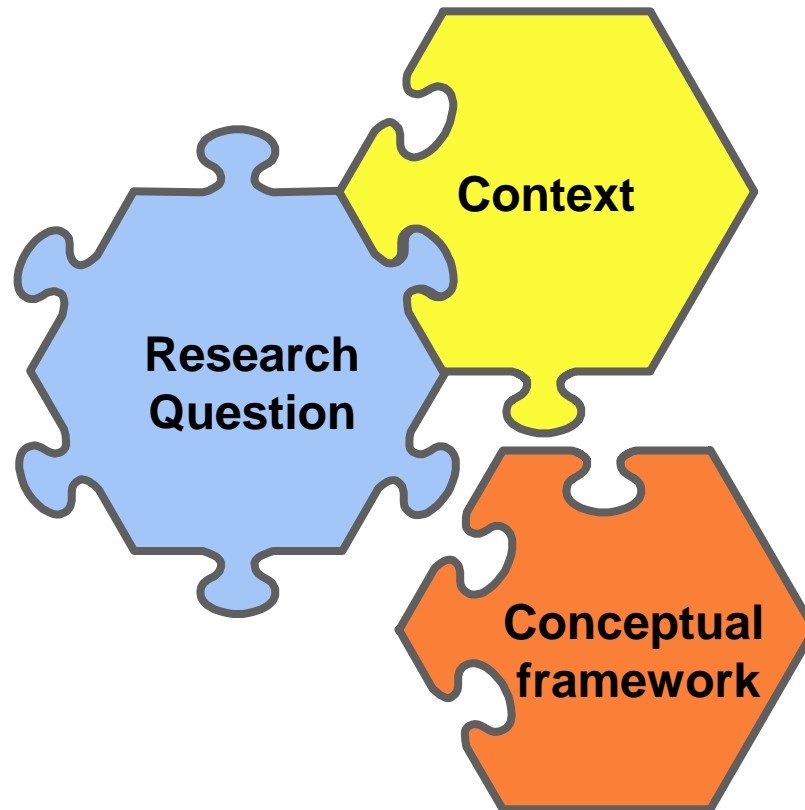
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*BUT*

in South Africa we do not have a standards-based curriculum

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*“ The cost of not having national standards [in education] is the cost of non-comparability ”*

Noah (1989, p. 18)



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*“ The cost of not having national standards [in education] is the cost of non-comparability ”*

Noah (1989, p. 18) ... between years, between examining authorities

**and**

*“ A nation’s educational standards are embodied in its secondary-school-leaving examinations ”*

Eckstein & Noah (1993, p. 143)

Because the SC examinations are not part of a standards-based curriculum I needed “build” conceptual framework which retrospectively could make explicit the standards implicit in the examinations

What are *educational standards*?

My meaning of educational standards and the conceptual framework were presented at the AERA 2009 meeting

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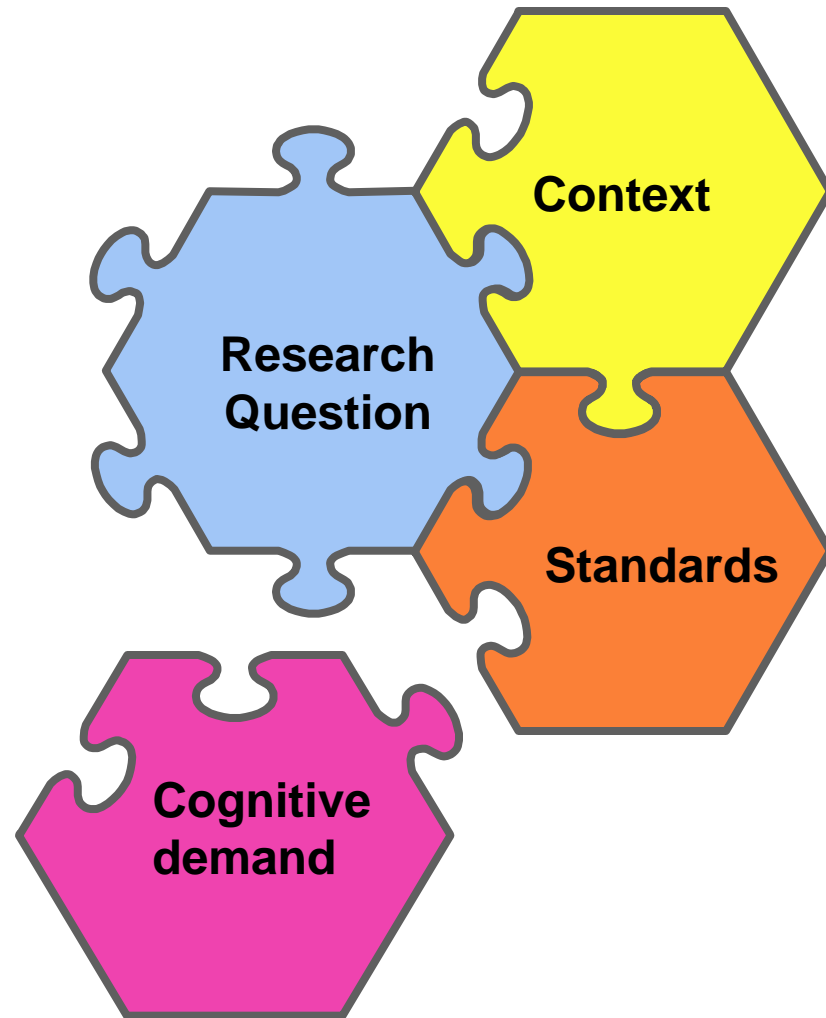
In this framework validity evidence is a proxy for standards

Cognitive demand was a crucial component of standards

And so, began my quest for way to  
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Few of these instruments have been validated, and most lack any theoretical or empirical evidence about how well they function

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YET most comparative studies which compare the putative cognitive demand of assessments do to not take into account that each instrument tells its own story

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Led to my developing and validating the Performance Expectations Taxonomy or PET

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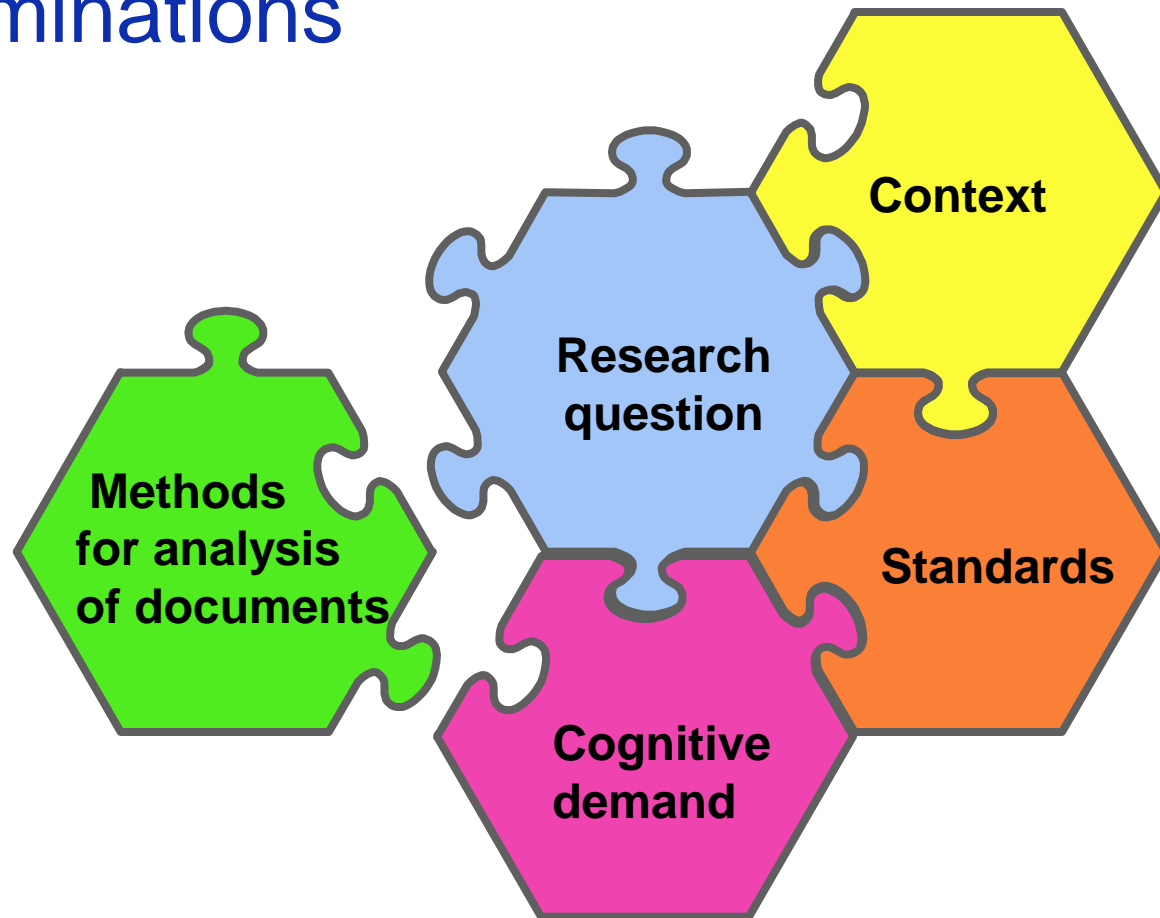
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AND

using PET we got very good intra- and inter-rater reliability

The remaining parts of the conceptual framework had to be operationalized to make explicit the standards implicit in the examinations

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- 111 provincial and national SC Biology examinations question papers
- 7 553 student examination scripts from two years covering eight examinations in all

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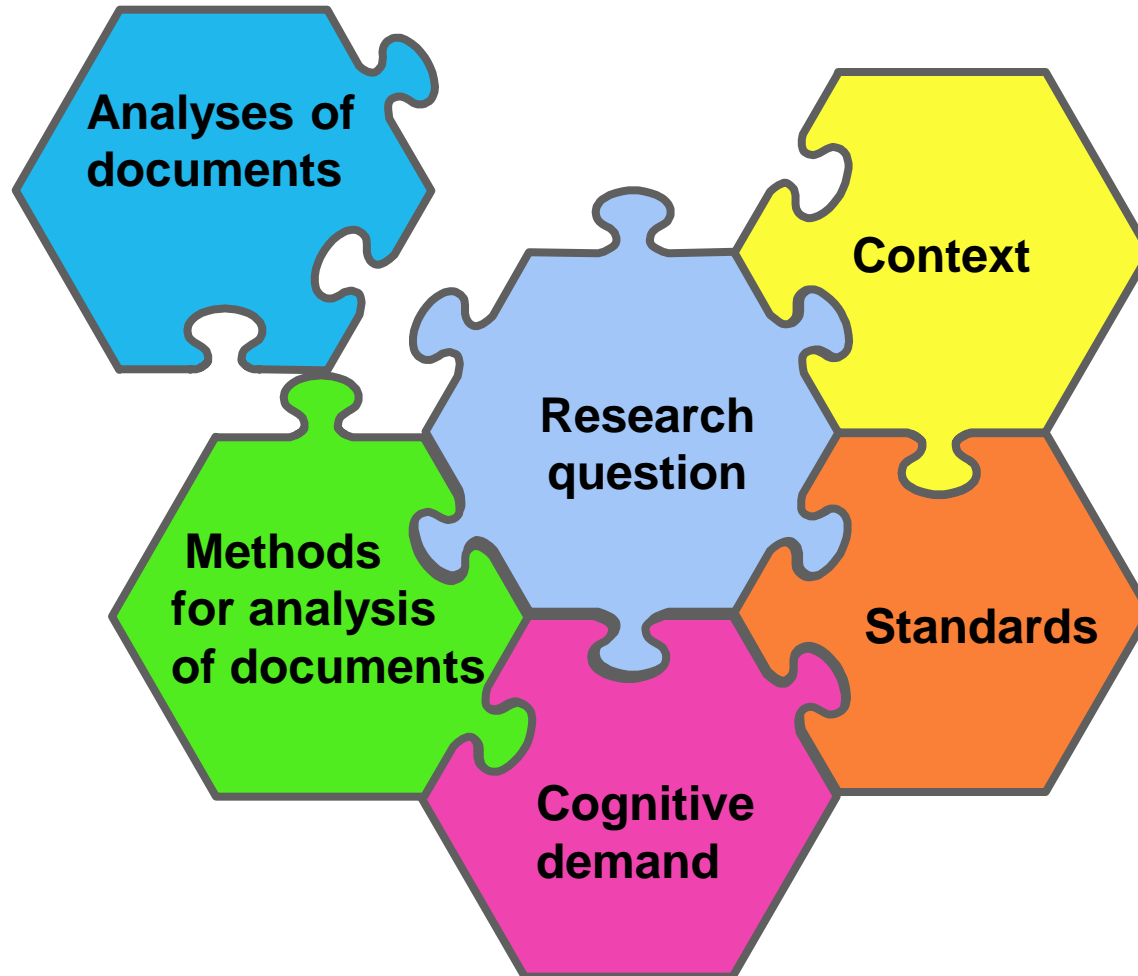
*(11 006 questions were analyzed, each question has 10 variables)*

- 7 553 student examination scripts from two years covering eight examinations in all

*(each script has between 53 and 79 variables, depending on the number of questions in the particular question paper)*

The standards of the examinations could be explicated, interrogated and compared

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A number of findings, conclusions and recommendations were generated by this work



# **SOME FINDINGS**

- equivalence between examining authorities and between years challenged
- same aggregate mark describes different performance standards in different examinations
- cut-scores are dependent on the content standards implicit in the question papers

The findings of this research highlights the important and open questions about the need for South Africa's education system to structure and gather validity evidence as an indication of standards, to support or challenge the inferences made about students knowledge and cognitive capabilities when they leave secondary school

# SIGNIFICANCE

1. Conceptual framework was born out of reasoned international practices – examinations are investigated from an international perspective
2. Successful operationalization of the conceptual framework is evidenced by descriptions of content standards and performance standards which enabled comparisons to be made within and between years
3. Development of PET
4. First empirical evidence of standards in South African SC Biology examinations

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This work generated many more questions than those that I set out to answer at the start of my research, and I thank the Cognition and Assessment SIG for giving me the opportunity to give you a brief glimpse the journey which produced my final dissertation

# Additional acknowledgements

Supervisors

External Examiners

Financial Support:

Spencer Foundation

AW Mellon Foundation

SA NRF

AERA International Travel Award (2009)