SAAIR 22nd CONFERENCE

- Title:

Barriers to Physical Sciences practicals at UMkhanyakude district

- Authors:

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Introduction

- Conducting practical work in Physical Sciences remains an important aspect of the subject.
- However, many teachers experience problems with conducting these practicals despite their importance.
- This study seeks to examine how teachers conduct science practicals in grade 10-12 as per requirements of Curriculum and Assessment Policy Statement (CAPS).
- Furthermore, the study seeks to identify the challenges experienced by teachers when conducting science practicals.

Background to the study

- Over the past years, many teachers have neglected the practical component in Physical sciences.
- One reason to this might be that National Education Department (NATED 550) focused mainly on content acquisition rather than on science processing skills.
- Practical work has gradually acquired an increasingly prominent place in Physical Sciences within the National Curriculum Statement (NCS) (Ngema, 2011)
- However, introduction of NCS did not give much light since it also did not prescribe any practicals except in CAPS.
- In addition, some studies have revealed that practical work was not fully implemented within the NCS despite them considered the pillar of effective teaching and learning Physical sciences (Pillay, 2008)
- In both afore-mentioned curricula, there were no prescribed practical tasks, yet questions on practicals were set in the final examinations.

Background to the study(cont..)

- With the introduction of CAPS, practical tasks have been prescribed and others recommended.
- However, as both the KZN internal moderator and Umalusi external moderator, having observed learners performing poorly in questions on practicals (KZN DoE, 2011, 2013, DBE, 2014); very few studies have been conducted on teaching and the use of practical work within the curriculum NCS.
- None of the studies known to the researcher has explored FET teachers' experiences with conducting practicals and how that impacts on their teaching practice in CAPS.

Research questions

- To what extent has the introduction of CAPS assisted with regards to practicals?
- What are the leading barriers to practicals that Physical Sciences teachers encounter in the FET school Phase?
- How do the barriers impact on learners' performance?
- What intervention strategies are needed by Physical Sciences teachers to be able to deal effectively with barriers they encounter when conducting practicals?

Theoretical framework

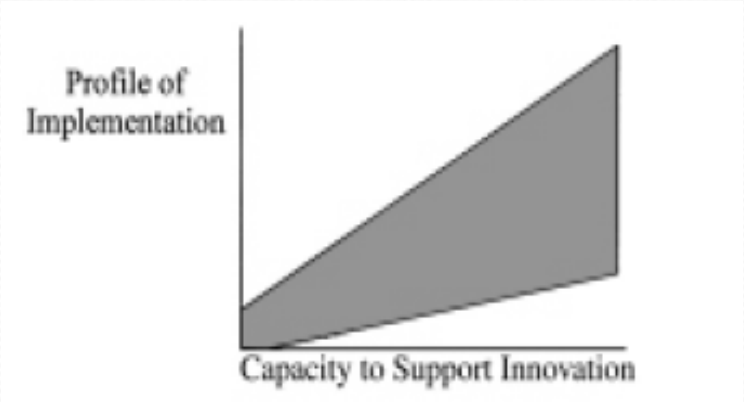
- The study will be guided by the Theory of Curriculum Implementation -TCI (Rogan & Grayson, 2003).
- The theory is particularly aimed at assisting the development of science curricula in the developing countries, hence relevant to the South African study.
- The three pillars of TCI are: Profile of Implementation, Capacity to Innovate and Outside Support' (Rogan & Grayson, 2003, p.1171).
- The researcher deemed it necessary to use this theory in her study since practical tasks have become compulsory in the new curriculum and yet teachers seem to have challenges with the implementation thereof.

Relationship between constructs

- The 3 pillars of the theory will be used to establish the extent to which teachers:
  - understand how they should implement CAPS practical aspects
  - identify needed capacity building measures with respect to practicals
  - are supported in order to assist them with practicals.

Relationship in constructs (cont…)

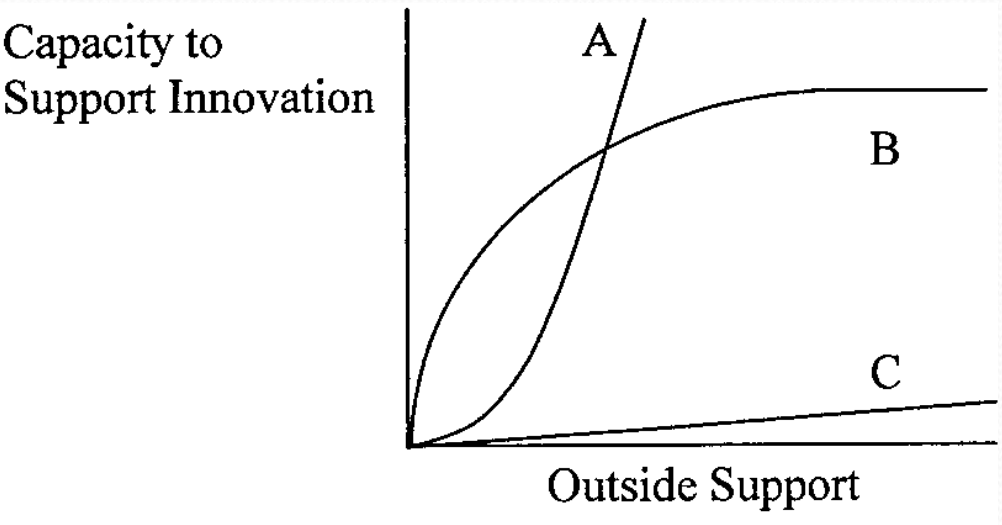
- The possible relationship between Implementation and Support (Rogan & Grayson, 2003):



- The more the teachers are capacitated, the more likely that they will implement curriculum better.

Relationship in constructs (cont…)

- Possible relationship between Capacity to Innovate and Outside support (Rogan & Grayson, 2003):



Relationship in constructs (cont…)

- Outside Support may be related to a wide range of changes in the Capacity.
- A- Outside support and rapid increase in Capacity thereafter maintained without ongoing support.
- B- Outside Support causes capacity to increase initially, but has less effect once Capacity reaches a certain level
- C- in some cases, increasing Outside Support might have little effect on Capacity.

Research methodology

- Interpretive paradigm- the experiences of individuals on conducting practicals
- Research design-descriptive
- Sampling- convenient, random sampling
- Ten FET schools(80-100, 50-79, below 50)
- Maximum of 3 teachers per school
- 15 cluster coordinators

Methods of data collection

- Questionnaires
- Semi-structured interviews
- Document analysis
  - teacher files
  - learner portfolios

Preliminary results

- Introduction of CAPS has a great positive impact as it specifies practicals to be conducted in each grade.
- Formal practicals are conducted in all grades.
- Some schools do not conduct formal practicals timeously.
- Informal practicals are generally not conducted.
- Lack of equipments and science kits is a challenge.
- Huge classes allow mostly teacher demonstrations and no learner involvement.

Preliminary results (cont…)

- Practical skills are generally not assessed.
- Poor design of practical assessment tasks and marking tools.
- Very little interventions are in place to assist teachers with practicals.

The End….

- Thank You….