TEACHERS’ USE OF LANGUAGE IN TEACHING MATHEMATICS IN BASIC SCHOOLS IN CAPE COAST, GHANA

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OUTLINE OF PRESENTATION

- Introduction
- Research Focus
- Research Context / Participants
- Research Approach
- Data Collection
- Data Analysis
- Initial Findings
- Critical Reflections
- Conclusion
INTRODUCTION

‘[T]eaching and learning mathematics is like teaching and learning a language in another language’. Kaphesi (2001)
Issues Arising

- The language issue goes beyond the medium of instruction.
- It includes all forms of interaction in the classroom (Classroom practices).
- It also includes mathematical language:
  1. Everyday words used to mean differently in mathematics eg. face, odd, square (multiple meanings even in math), plane, volume.
  2. Specialized mathematical vocabulary which have meaning only in mathematics eg. denominator, quotient, numerator, quadratic.
  3. Symbols eg. 1, %, +, =.
What if the language of instruction is not familiar to the learner? How would we put Kaphesi’s assertion?

It becomes even more complex
FOCUS

Explore this complexity to see

1. What teachers do?
2. How do they do what they do? And
3. Why do they do what they do how they do it?

With respect to language of instruction and mathematical language.
RESEARCH CONTEXT AND PARTICIPANTS

- Two basic schools in Cape Coast – one public, one private
  - Basic school because that is where foundation is built and I envisage that the language issue will be more problematic there
  - Cape Coast selected for practical reasons – cost, contacts and my own proficiency in Fante
  - Private school pupils have a better English language facility
- Classes four and six of these schools
  - Switch to English is supposed to be in class four and class six is the transition point from the primary school to the junior high school
- Mathematics teachers of selected classes in these schools
  - The teacher is a mediator and a facilitator of pupils construction of knowledge
RESEARCH APPROACH

- Qualitative – depth rather than breadth
- Interpretive – describing, analyzing and interpreting
- Case study – the teacher in each class is a case
DATA COLLECTION

- Classroom observation using video and audio recordings
- Stimulated recall interviews using the videos as stimulants
- Teacher interviews
- Field notes
- Documents - syllabus and textbooks
DATA ANALYSIS

- Grounded approach to data analysis, looking at stages of each lesson
- Transcribing lessons
- Transcribing Interviews
- Use of software – Nvivo and Transana
- Coding – both inductive and deductive
- Memoing
- Describing, analyzing and interpreting
- Supporting the videos with the Stimulated Recall interviews, the teacher interviews and the documents
INITIAL FINDINGS

Use of language
1. Mostly English in all classes in both schools
2. English only used by both teachers and pupils in both classes in private school. Use of Fante was prohibited
3. English only used by the class six teacher in the public school. Pupils however used Fante in the classroom
4. Use of both English and Fante in class four of the public school. Teacher encouraged the use of fante
INITIAL FINDINGS

- How language was used and why they were used this way
  1. Whole class teacher led exposition – usual/normal practice, time
  2. English for introduction of lessons, instilling discipline and giving formal definitions
  3. Fante for explanations and encouragement
  4. Teacher elicitations
    - Echo - repeat
    - Routine – agreement or disagreement
    - Real – other more demanding
  5. Pacing of speech
  6. Isolation of key words (language teaching strategy?)
  7. A lot of repetition by teachers
  8. Direct translations
  9. Gesturing and use of analogies
INITIAL FINDINGS

- Reasons for teacher choices
  1. Policy – national and local
  2. Perception of English – teachers’ and societal
     ‘English is the language of math. As for the Fante, we use it only to explain things to the pupils. How do you expect them to pass if we don’t teach them the English’. Linda, 2009
  3. Teacher’s own competence in the use of Fante
4. Pupils English language facility
5. Language of curriculum materials – syllabus and textbooks. Nothing in Fante
6. Language of examination
7. Pupils’ understanding
   Still exploring the data and reviewing literature for some framework to hang the data analysis on
CRITICAL REFLECTIONS

- Ethical issues
  - Access – continuously negotiated
  - Informed Consent
  - Anonymity and confidentiality
  - Right of withdrawal
  - Feedback
  - Complaint procedure
  - Data management and retrieval
CRITICAL REFLECTIONS

Ensuring Quality

1. Reactive effect – rapport building and long stay in research site
2. Triangulation of data
3. Respondent Validation?
4. Translation – issues – back and cross
5. Inter-coder reliability – discussion of codes with supervisors and some critical friends
6. Paying critical attention to varying voices (In the field (academics) and on the field (participants))
7. Thick descriptions
CONCLUSION

- Teachers face several linguistic challenges in teaching mathematics in basic schools in Ghana.
- Teachers adopt several strategies to tackle these challenges.
- Pupils' home languages can be a useful resource to teachers.
- More research on language issues in the teaching and learning of mathematics is necessary.
Thank you