



University of
BRISTOL

**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)



INT'D CONT'D

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, %, +, =



INT'D CONT'D

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 – teachers as cases



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 it's use



INITIAL FINDINGS

- How language was used and why they were used this way
 1. Whole class teacher led exposition – usual practice, time
 2. English for introduction of lessons, instilling discipline and giving formal definitions
 3. Fante for explanations and encouragement
 4. Teacher questioning
 - Echo - repeat
 - Routine – agreement or disagreement
 - Real – other more demanding
 5. Pacing of speech
 6. Isolation of key words
 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 – maybe categorize these into political, economic and educational



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

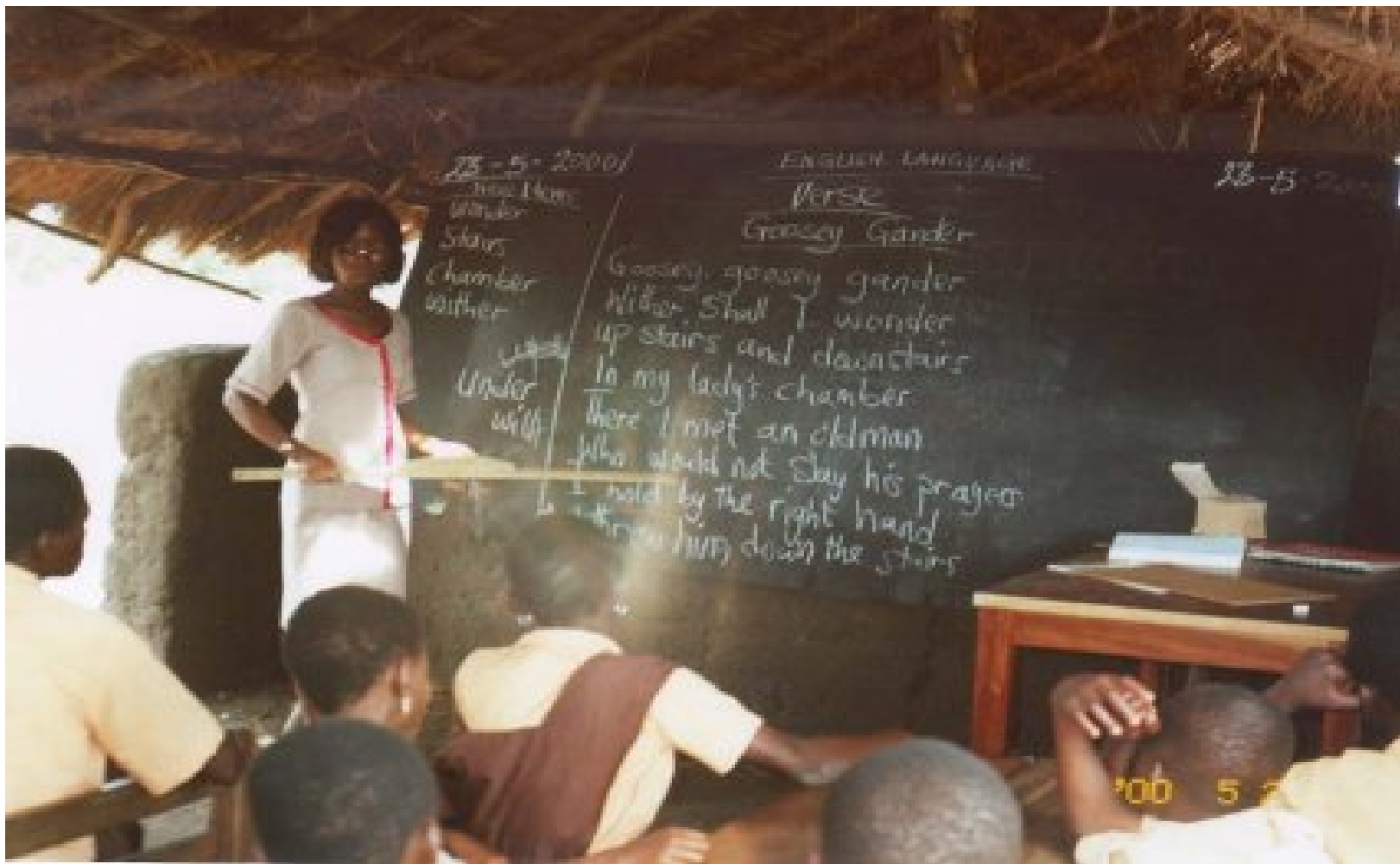
1. Reactive effect – rapport building and long stay in research site
2. Triangulation of data
3. Respondent Validation?
4. Translation – issues – back and cross
5. Inter-coder reliability – discussion of codes with supervisors
6. Paying critical attention to varying voices
7. Thick descriptions



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

