

# Using mixtures of local language and English in teaching science at the lower primary level

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## ABSTRACT

This study examined the use of local language/ mixture of local language and English in teaching natural science at the lower primary school. Using ethnographic tool I document the different natural science events in Ama and Patience classroom. The results revealed that, the use of local language and English in combination at the lower primary level facilitated students learning, understanding and contributions in science lessons.

**Keywords:** natural science; language policy; ethnography.

## Introduction

Language plays a very important role in the life of man and in the process of education. It is used by people right from infancy and they grow up with it. It is used by people to express their feelings and to communicate with others (Mensah, 2000). It is also the reposition and the means of articulation of values, beliefs, traditions and past achievement. The best medium for teaching a child is his mother tongue (UNESCO, 1953). Psychologically, it is the system of meaningful signs that in the child's mind works automatically for understanding and expression. Sociologically, it is a means of identifying with members of the community to which one belongs. Educationally, the child learns more quickly through the mother tongue than through unfamiliar linguistic medium. It further states that it is through the mother tongue that every human being first learns to formulate and express his ideas about himself and about the world in which he lives. It continues that every child is born into a cultural environment, and the languages used are both a part of and an expression of that environment. The UNESCO paper further recommends that the use of the mother tongue be extended to cover the entire primary school education.

Before formal education was introduced in Ghana, traditional education was conducted also in the indigenous languages (Spring, 1998). With the inception of formal education and subsequent use of English as the medium of instruction, the indigenous languages were seen as inadequate as teaching media (Bamgbose, 2000). Bilingual education in Ghana begun with the inception of formal education in Ghana which began with the Castle schools and was later continued by the Christian missionaries. The use of Ghanaian language during the period from 1529 to 1925 had gained root to the extent that when the British colonial government took over the administration of education in the country in the 1925 it could not change the trend (Bamgbose, 2000). In those days, a systematic pattern began to emerge with regard to both education and language use. Ghanaian language was to be used as the medium of instruction only at the lower primary level, with English used thereafter. The policy was reversed and became unstable when the administration of the country came under the jurisdiction of the Ghanaians after independence. Since then the use of Ghanaian language as the medium of instruction at the primary level has been changing (Owu-Ewie, 2006).

In the 2003 TIMSS (Trends in International Mathematics and Science Study) Mathematics test for grade eight, it was reported that out of the 45 countries that participated, Ghana finished 44. Ghana students scored 276 compared to the international average of 466. In two articles written in Ghana news by Fredua-Kwarteng and Ahia (2005a, 2005b), these authors tried to explain the low performance. In the first article they discussed the results in mathematics, in the second the results in science. The authors argued that since Ghanaian students took the test in English (the –so-called official language of Ghana) they were disadvantaged. The authors continued that they were not surprised that countries that performed very well in mathematics and science test were Taiwan, Malaysia, Latvia and Russia because these countries used their own language to teach and learn science and mathematics. The authors argue that Ghanaian students who are proficient in his or her native language would be likely to answer most of the questions correctly if the questions were translated into native language of

the students. In this article I contribute to the field of science by presenting a study on the use of local language and mixture of local language and English in teaching science at the lower primary at Ohiamadwen. The main questions in the study were;

1. How are children instructed in natural science in Fante classroom?
2. How do the observed classroom practices relate to the curriculum provisions?
3. How do primary school teachers use of mother tongue/mixtures impact on pupils understanding in science.

### **Science education at the primary school level**

Science education is very important to the development of any nation. The developed nations have been able to achieve so much in Science and Technology because they placed much emphasis on Science education. In Ghana, Science education is also a core component of the school curriculum. As stated in the Natural Science Syllabus (MoESS, 2012), Science education aims at equipping every young person with the necessary process skills and attitudes that will provide a strong base for further study in Science.

Effective teaching and learning of Science as in any other subject occurs through the right use of

language. In Ghana, the language of instruction in schools is determined by the language policy, which has suffered some instability starting from the pre-colonial era (Asare-Danso, 2012). The Ministry of Education, Science and Sports, realising the instability of the language of instruction policy introduced a new policy in Ghanaian basic schools under the National Literacy Acceleration Programme (NALAP) in 2009 (UNESCO, 2003). The programme was introduced based on the assumption that children learn to read and write better and more quickly in their mother tongue and can easily transfer these skills to the learning of English. The policy states that Ghanaian languages should be used as the medium of instruction at the lower primary level of education in Ghana and English where necessary but English should be used from upper primary up to the tertiary level. This new policy has been in existence to date. The motivation behind the adoption of this approach is the overwhelming evidence that the mother tongue based instruction is a powerful tool for acquisition of literacy skills and mastery of concepts (UNESCO, 2008). It is to this end that this study seeks to investigate how teachers use of indigenous language or mixture to teach science impact on students understanding.

Prior to the introduction of the new educational reforms which also came along with the language policy, Science was taught both at the lower and upper primary levels of education in Ghana until the 1998/1999 academic year. From the year 2000 to 2008, Science was incorporated into Environmental Studies and taught at the lower primary. However, the teaching of Science concepts was generally neglected by teachers when teaching Environmental studies. It therefore became necessary in the educational reforms to introduce the study of Science as Natural Science at the lower primary level on the basis that pupils would develop the spirit of curiosity, creativity and critical thinking (Alexander as cited in Acquah, Eshun&Afful – Broni, 2014). Also, it was envisaged that making pupils study Science at the lower primary level, would enable them to develop skills, habits of mind and attitudes necessary for scientific inquiry, and to communicate scientific ideas effectively (MoESS, 2012). It is hoped that these objectives, if achieved, will give pupils firm grounding for studying Science in later years thus the introduction of Natural Science at the basic level of education in Ghanaian schools.

### **How Do Children Learn Science**

The science teaching and learning standards (National Research Council, 2000) suggest that students cannot achieve high levels of performance without access to many different learning materials and work spaces that give hands-on and minds-on experiences. To achieve excellence, a more student-centred programme is necessary as opposed to the traditional format of lecture, text, and demonstration. Additionally, the standards assert that active learning must involve interaction with others (National Research Council, 2000). This way of learning is explained and supported by findings from research on social constructivism (Bruner, 1985).

### **Research approach**

I employed ethnographic techniques for this study (Erickson, 1998). The principal method of data collection was participant observation. The school is situated in a suburb of a metropolitan city. The total population of the school is three hundred and sixty eight pupils (368) which are made up of 86 JHS pupils, 217

primary pupils and 65 KG pupils. The total numbers of teachers in the school are nineteen (19) of which eight (8) are degree holders and the rest are diploma holders pursuing post diploma degree in Basic Education.

Data was gathered for this study in a number of different ways: classroom observations, video and audio recording and teacher interview. In my classroom observation I looked at how pupils were being taught science with local language and mixtures of local language and English in teaching science at the lower primary level. My purpose was to document the methods, teaching materials and the styles the teachers use in an effort to teach science. My observation focused on the use of local language and mixture to teach science. The teachers described here were picked from a sample of nineteen teachers over one month. They were chosen for their relatively relaxed manner when being observed. Each of the two teachers is fluent in both Fante and English language. The observation and recording took place from 7<sup>th</sup> April to 30<sup>th</sup> June, 2014 in a government primary school in class 2 and 3 at Ohiamadwen –(a pseudonym), consisting of eight to nine year pupils.

## **RESEARCH SITE**

This paper is based on ethnographic research carried out over four months in Sekondi-Takoradi Metropolis. Even though figures are unavailable for the Metropolis, educational level and literacy rate is quite high in the Metropolis.

Ohiamadwen (pseudonym) is a suburb of Takoradi. It has two secondary schools, College of Education and a Vocational institute and has a rest site for long distance drivers. Most families in town do petty trading and supplement their income with the selling of quarry stones. Children are exposed to both Fante and English language from an early age. Fante is one of the three formal languages of the Akan language. It is a major local language spoken in the Central and Western Regions of Ghana as well as in the settlements in other regions from mid to southern Ghana. Although figures are unavailable for the town too, education levels and literacy rate among the town folks are not very high.

## **Natural science instruction in Fante classroom.**

### **Context**

Science education is very important to the development of any country. Science education is important in the sense that it does not only present the most important explanations we have of the material world, but also help us to engage with many of the issues confronting contemporary society (Osborne and Dillon 2008). A number of the developed nations have been able to attain so much in Science and Technology because they placed much emphasis on science education (Acquah, Eshun and Afful-Broni, 2012). Science and Technology form the basis for inventions, manufacturing and for simple logical thinking. This means that scientific and technological literacy is necessary for all individuals, especially in the developing countries which have to move faster in terms of development in order to raise the standard of living of their general population (Ministry of Education, Science and Sports, 2012).

As stated in the Natural Science Syllabus (MoESS, 2012), Science education aims at equipping every young person with the essential process skills and attitudes that will give a strong base for further science. To achieve this plan, teachers need to use helpful teaching methods in their teaching, for effective teaching to take place. It is thus the responsibility of the government and all stake holders in science education to provide the necessary support such as logistic, human resources and policies for good teaching and learning to take place.

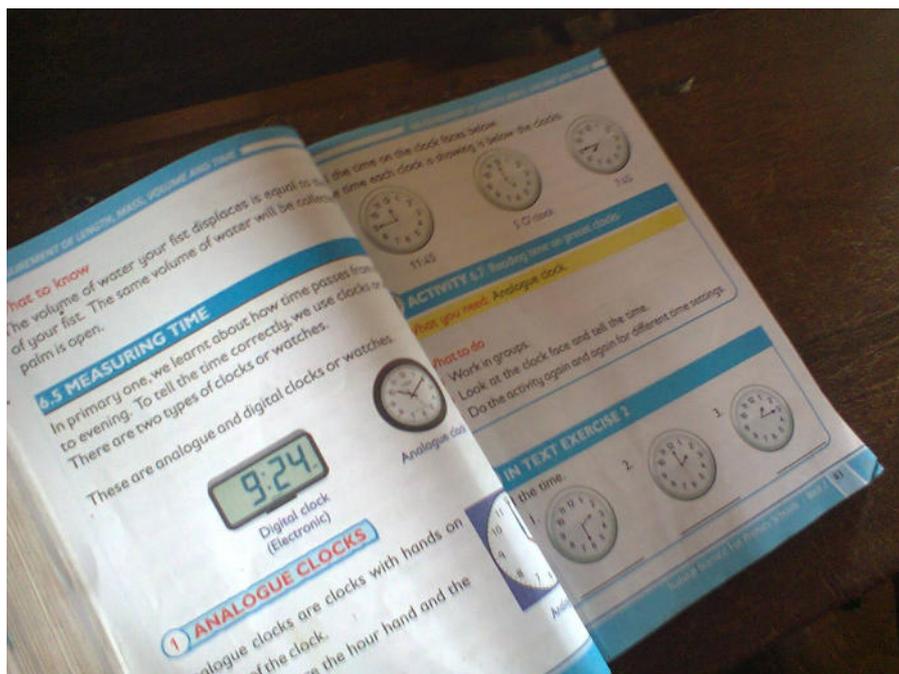


Figure 1. Sample pages from the Natural Science Text Book

## Observations

The school I visited to observe Natural science instruction in Fante was a public school located in Ohiamadwen, a village in the Western region of Ghana. Ohiamadwen Basic School was established in 1972 by the Ministry of Education which serve the village folks. There were three hundred and sixty eight pupils attending classes from Kindergarten to Junior High School. All the nineteen teachers in the school have had at least three years teachers training. Some of the pupils came from the nearby towns. The school had twelve classrooms with well-furnished mono desk and cup boards to keep books and three well-furnished offices for the teaching staff. The classes I observed was class two and three. It housed forty pupils in four rows of mono desk. The room was bright from the light coming through the doors and windows that remained open.

In the classroom each students had natural science text book. In her classroom of 40 students, Ama [pseudonym] had already covered electronics, waves and food. Students were reading their text book on the topics that they had so far covered. Ama started her lesson by reviewing her previous lesson on food. She then asked the students the reasons for washing their hands before eating. Ama helped the students to come out with the reasons for washing their hands before eating on the chalkboard. This writing on the chalkboard was followed by chanting after students reading the item on the chalkboard.

Extract 1 show a natural science activity on personal hygiene observed and recorded during one of my visit. (T=teacher; S(s) =student(s)).

### Extract 1 (18/06/14)

T: how do you understand the term personal hygiene? [Seyeka personal hygiene nanaasekyere  
nyi den]

S: se ye guar na se ye siesie hen fie

T: personal hygiene is the way one keeps himself or herself and the environment clean.

Ss: chanting of the definition after the teacher.

T: what are the things one can do to keep his body clean? [ebankwan do na ye fa do ma hen ho tsiw?]

S: brushing our teeth at least twice daily.

T: is that the only thing?

Ss: by cutting down your hair regularly. [Students spend more minutes chanting after the teacher]

I observed that the use of local language [Fante] and English in combination helped the students to understand the questions and contribute effectively in the classroom discussion.

### **Extract 2 (18/06/14)**

T: what are some of the things we do to keep our environment clean?

Ss: sweeping the compound

T: what other thing apart from this?

S: weeding your compound

T: write the points on chalkboard

Ss: write the points in their jotters

T: take out your exercise book from the cupboard and do the exercise

Ama was observed moving around and correcting students' mistakes during exercise. Ama used English in posing the questions and later translated it into Fante, because according to her, it helps the students understand the questions better. She also used chanting frequently because to her, it makes the students remember what they have learnt. The natural science lesson was dominated by discussion in Fante and English language.

### **Natural Science instruction in class two**

The class I visited to observe the second time was primary two. Patience (Pseudonym) was teaching measurement. There were 35 pupils in the class. Majority of the people were above 8 years. The class had one permanent teacher and two mentees from a college of education in the vicinity that were having their one year internship programme. The focus of the description here is the classroom of teacher Patience (Pseudonym) who has taught for fifteen years in Ohimadwen Basic School

In her classroom of 35 pupils, all Fante speakers, Patience had already covered types of rocks in their syllabus. Patience introduced the lesson by showing a tape measure to the class to come out with it. She then asked three students to step up in front of the class to measure with the tape items of different shapes. (See Extract 3)

### **Extract 3 (13/07/14)**

T: what is it used for? [yedzi ye den]

S: for measuring

T: how do we measure length of object?

S: with tape measure

T: apart from this, what else can you use to measure the length of an object?

S: hen nan [meaning: our foot]

SS: use their foot to measure the length and breathe of their classroom.

T: apart from foot, what other thing can you use to measure length?

S1: sticks

S2: arm span

Students were able to contribute to the lesson very well; this might be as a result of the fact that Patience spoke both English and Fante in her lesson delivery. She occasionally demonstrated for students to observe. This is supported by the National Research Council (2000) that children will achieve high level performance when they have access to learning material and work place that give hand-on and minds-on experiences.

After taken them through some aspect of measurement, Patience demonstrates with an analogue watch to teach the measurement of time. She explained to children the meaning of hour hand and minute's hand of the clock. Patience then allows the students to practise with the clock if they can measure effectively with the analogue clock. After this clock exercise, Patience then picks a cardboard full of exercise on measurement of time. Then she asked some students to read the various time of the clock aloud which some did perfectly. Finally, students were asked to write the time of the clocks in their exercise books. Patience moved around, guiding and encouraging students. Some of the students interchanged the hour hand to be the minute hand. Patience immediately marked the exercise of the students who have finished the exercise



Figure 2. Patience demonstrating with an analogue clock

### Conclusions and discussion

This study aimed at investigating how teachers use indigenous language/mixtures to teach science at the lower primary level. The classroom observations and additional information from teacher's interview helped me to know what goes on in the lower primary classroom. In all the two classes where the natural science lessons were observed, both teachers taught very well using a lot of teaching and learning material in their lessons. In the classes, there was enough evidence of teaching the children to learn natural science. The use of chanting, memorisation and discussion in the class also facilitated learning. The use of mother tongue by both teachers contributed immensely to the understanding of students and this confirms what Acquah, Eshun and Afful-Broni, (2014) shared that the mother tongue places a crucial role in the learning of subjects. Again this also confirms the

view held by Fredua-Kwarteng and Ahia 2005a, 2006b) that Ghanaian students will do well in the TIMSS examinations if the questions were translated into native language of the students. Furthermore, even though the language policy of education in Ghana says that local language is used to teach at the lower primary, some teachers still used more English to teach and to explain some science concepts. NALAP also requires that 80% of instructional time at the lower primary school should be spent on the mother tongue while 20% is spent on English. The reason behind the adoption of this approach is the clear evidence that mother tongue based instruction is a powerful tool for acquisition of literacy skills and mastery of science concept. ( UNESCO, 2003).

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