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Language of Instruction and Interaction Patterns in Pre-Primary Classrooms in Nigiera.

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ABSTRACT

The study sought to investigate how pre school teachers and their pupils interact during instruction in numeracy lessons in Nigeria. The sample consisted of 2859 pupils from 72 pre-primary institutions/classrooms (selected through stratified random sampling to ensure adequate representation of private, public, urban and rural schools). The collection of data involved using two observational instruments (Classroom Interaction Sheet, CIS and Ten-Minute Interaction Instrument, TMI) to record interaction patterns in 72 lessons during the teaching of numeracy. Data analysis involved the use of frequency, percentages, chi-square and graphical illustrations. The result revealed that the major language of instruction was English language rather than the language of the pupils' immediate community; the use of instructional time and direction of interaction tend to be sensitive to language of instruction; teacher-initiated interactions and whole class activities are associated more with the use of English as language of instruction while learner-initiated interactions and individual/small group activities are associated more with use of language of the pupils' immediate community in instructional delivery; and the direction of communication was mainly from the teacher to the whole class.

INTRODUCTION

The process variables of school quality, which have to do with patterns of interaction among teachers, learners and classroom settings during instruction, have been the focus of educational researchers and psychologists in recent years. For instance, Kontos and Wilcox Herzog (1997) view quality in early childhood programs, in large part, as a function of the interactions that take place between the adults and the children in those programs. The National Association for the Education of Young Children's Developmentally Appropriate Practice Guidelines also placed much emphasis on teachers' classroom interaction, as well as does the accreditation guidelines by National Academy of Early Childhood Programmes (Bredekamp 1987; Bredekamp & Copple 1997, cited in Kontos and Wilcox-Herzog, 1997).

Classroom interaction, which could be seen as the communication between teacher and learners in small groups or the entire class as well as among learners, has been identified as one of the major key terms in the conduct of classroom lessons (Obanya, 2004; Duffy, Warren and Walsh, 2001). It could be teacher- or – learner – initiated. The possible cognitive and social gains as well as the positive learning outcomes resulting in and from such interactions within the classroom community have also been highlighted (National Research Council, 2001). In addition, the environment in which children develop and learn as well as the choice of language and pedagogical methods adopted by the teacher have been identified as important factors that determine the participatory level of the children in any teaching and learning situation (Kartz, 1987: Obanya, 2004). More so, language is seen as the major tool through which literacy and concepts are more easily internalized especially if it is done in the language, which the learner knows best (Bamgbose, 1976; Chomsky, 1977; Vygotsky, 1986; Prah, 2003; Brock-Utne, 2005). It thus seems that teacher-learner interaction could drive be promoted more in situations in which all those involved (particularly children) have no inhibitions in terms of language used. Therefore, teaching-learning process involving pre-school children in the first language of the children, is likely to reduce the incidence of one sided flow of interaction (teacher to pupil) in preschool classroom.

Nigeria is a multi-lingual country with more than 250 ethnic groups, with varying languages (Wikipedia, 2006). The largest ethnic groups are the Hausa-Fulani, Yoruba, Igbo (Ibo), Ijaw, Kanuri, Ibibio and Tiv. There are

a total of 250 dialects spoken in Nigeria, which correspond with the estimated number of ethnic groups in Nigeria. However, these dialects emanate from the three major languages spoken in Nigeria (Hausa, Igbo and Yoruba languages). The autographs of these major languages have long been developed as far back as the early nineteenth century by the missionary converts who came to Nigeria and felt that the best way to inculcate the rudiments of literacy to the natives was through their mother-tongue (Bamgbose, 1976). A majority of Nigerian population live in the rural locations (64%) and are mostly illiterates while only 36% of the population are urban dweller, with a large proportion also illiterate. The overall literacy rate is estimated at 57.1% (Federal Ministry of Education /National Population Commission 1998 cited in Olorunfunmi, 2000).

The missionaries who were not Africans and also who worked with adults and not children recognised the literacy level of the Nigerian people. This perhaps made them realise the importance of using Nigerian languages for emergence literacy thus established the tradition of beginning learning in ones mother tongue. Most practicing educators and educational researchers share this view (Bamgbose, 1976; Prah, K.K. 2003, Brock-Utne, 2005, UNESCO 2001; Obanya, 2004). They all assert that the ideal practice for educating learners should be for teachers to use the language in which the learners are more relaxed and confident and one that would create the opportunity for them to express their opinion about things more freely, than they would normally have done in a language they are not conversant. More specifically, UNESCO (2001) views the use of mother tongue as means of improving the quality and relevance of education and therefore urged the African leaders to promote the use of the mother tongue in the early childhood education, early years of primary education and link personal development to the learners' cultural heritage and strengthen their self- confidence (p.28)

In Nigeria presently, the National Policy on Education (1977 revised-2004) prescribes that preschool children should be taught in their mother tongue from the very beginning whereas English (which is the second language) should be taught as a subject and then be used as language of instruction from the third year of primary education. The Government appreciates the importance of language as a means of promoting social interaction, national cohesion and preserving cultures. Very few textbooks have also been developed for this level in the major languages with the help of donor agencies like the Bernard van Leer education trust fund (Osanyin, 1998). However, until now, there have been no studies on classroom interaction patterns and language of instruction at the pre-primary level of education in the country. The few existing studies on classroom interaction appear to be limited to secondary and upper primary school levels (Okebukola, 1998; Ogunkola, 1999). Neither did any of the studies examine the issue of language of instruction in classroom interaction. This study therefore sought to give a comprehensive description of how teachers and pupils interact during mathematics lessons in pre-primary classrooms in Nigeria More specifically, the description provided answers to the following questions.

(i) What are the prevailing interaction pat terns (in terms of use of instructional time and direction of communication) during the teaching of numeracy in pre-primary classrooms in Nigeria?

(ii) What is the prevailing language of instruction in pre-primary classrooms in the country?

(iii) Do the prevailing interaction patterns (use of instructional time and direction of communication) depend on language of instruction?

METHOD

Sample

The sample consisted of 2859 pupils aged 4 to 5 years as well as 72 teachers from 72 pre-primary institutions/classrooms across the three major old regions (Eastern, Western and Northern regions) in Nigeria. Subjects were selected through stratified random sampling to ensure adequate representation of private, public, urban and rural schools. The classroom compositions of the subjects used were heterogeneous in nature in the urban locations but not in the rural. This is explicable in the country because of rural-urban migration of people from different parts of the regions to the cities. Thus, in urban locations, teachers observed worked with children from divers socio-economic and linguistic backgrounds (the three major language groups). Information from the pupils was collected through the use of the class register. As a result, the preschool teacher in an urban location attended to children whose parents are educated and could communicate with them at home in English (this comprised 38% of the children observed) as well as those whose parents could not (included 62%of the

children). However, interviews from their teachers showed that all the children in each particular classroom setting observed are more conversant with the language of their immediate environment than English irrespective of the region or state they come from. This situation is somehow different in the rural locations considering the fact that people live in clans/villages, which constitute of people who share the same language/dialect. In addition, considering the age of the children in this level, preschools are situated in most places, within working distance of the children from their homes. Some are organized in village halls, churches, and mosques and in people's homes.

Instruments

The collection of data involved using two observational instruments (Classroom Interaction Sheet, CIS and Ten-Minute Interaction Instrument, TMI) to record interaction patterns in 72 lessons during the teaching of numeracy. Each lesson was recorded for thirty minutes using both instruments. During the thirty minutes observation period, the CIS was used in the first ten minutes followed by the TMI in the second ten minutes and then CIS again in the last ten minutes. The CIS, a category system scheme, is an adaptation of the Classroom Activity Sheet (Yoloye, 1978). It consists of fifty-five sub-categories which were grouped under seven main behaviour categories placed beside a row of boxes, in which an observer is expected to tick the most frequently occurring behaviour every ten seconds. The TMI, however, was adapted from Bourke, Hildyard, and Anderson (1989) Five Minutes Interaction (FMI) used for the IEA study. The TMI consists of four dimensions of interaction with about forty-five sub-categories, which, are to be coded every five seconds. In all, a total of sixty and two hundred and eighty-eight tallies were expected to be coded for the CIS and the TMI respectively during each thirty-minute lesson.

Before this study, the original instruments have been used in a number of studies that ascertained the extent to which teachers and their pupils interact during instruction at the primary level of education (Yoloye, 1978; Okpala and Onocha, 1988; Ogunkola, 1998; IEA, 1989). Thus, both instruments were modified to suit pre-primary classroom activities in Nigeria. The modified versions were also pilot tested over a period of eight days using two trained observers who solicited observation information in eight pre-school classrooms (4 private and 4 public schools) in rural and urban locations. These schools were not part of the study sample. The pilot test data showed that the observers did not have difficulty identifying and recording the behaviour categories. In addition, the data produced inter-ratter reliability values of 0.88 and 0.92 for the CIS and the TMI respectively.

Data Collection and Analysis

Subjects were observed over a period of fourteen weeks and two days (72 days) by the investigators. Each teacher and the pupils were observed twice. The pilot testing exercise brought us face-to-face with one of the problems of using observation as a method of data collection: how much does our presence affect what is being observed? To overcome this, we used the habituation technique, which has to do with our visiting the classroom environment (pupils / teachers) during instruction twice before the proper observation. This is to enable the pupils get used to the video camera being mounted in front of their class. With this we assumed that the effect due to the observer presence would diminish over time. Researchers who are experienced at doing observational work with children (Tizard and Hughes, 1984) believed that the effect of observer is usually minimal after an initial acclimatization. Behaviours were recorded using the two structured instruments and a video camera.

The observer ticked the most frequently occurring behaviour bearing in mind to make a tally after every ten seconds in the appropriate row when the prevalent behaviour category is demonstrated (CIS) and every five seconds for TMI. Data analysis involved the use of frequency, percentage, chi-square and graphical illustrations because the data is nominal in nature.

RESULTS

Prevailing Interaction Patterns (Use of Instructional Time and Direction of Communication)

(i) Use of instructional time

The prevailing interaction pattern during the teaching of numeracy in Nigerian pre-primary classrooms, in terms of use of instructional time, is shown in Tables 1.1 and 1.2, while the interaction pattern in terms of direction of communication is shown in Table 2. These interaction patterns are also illustrated graphically in Figures 1 and 2 respectively.

As shown in figure 1 teachers in pre-primary classrooms spent a larger proportion of their lesson time (51.2%) interacting (prompting learning) with the whole

class (e.g. explaining, questioning, giving directives, writing on the chalkboard, distributing textual materials, etc) whereas less proportions of the lesson time were spent on learning-facilitating activities that centred on groups of pupils (19.8%) and individual pupils (12.3%). However, 15.4% of the lesson time was spent on 'teacher not facilitating learning activities (e.g. monologue, punishing, grading pupils' work, discussing with visitors, using negative reinforcement etc) while the rest of the time (1.3%) was spent on confusion (e.g. class disorganized, children wandering aimlessly, children fighting).

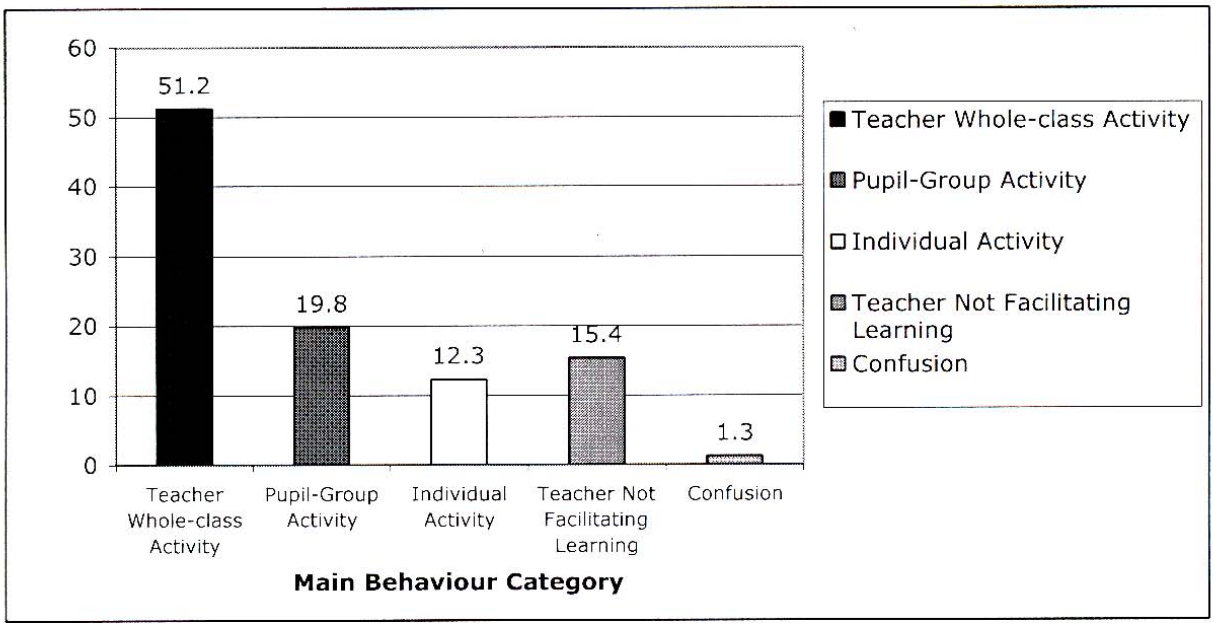

Figure 1: Use of Instructional Time During Teaching of Numeracy in Pre-primary Classrooms in Nigeria (derived from Table 1.1).

(ii) Direction of Communication in Pre-primary Classrooms in the Country

The direction of communication associated with the prevailing interaction pattern, as shown in table 2, reveals that 75.4% of communications during teaching of numeracy were directed from the teachers to the pupils (57.5% from teacher to group and 17.9% from the teacher to individual pupils). The direction of the communication from pupil to teacher accounted from 24% (group to teacher, 13.3% and pupil to teacher, 10.7%) of the total communications whereas less than 1% of the communications represents teacher communication with others.

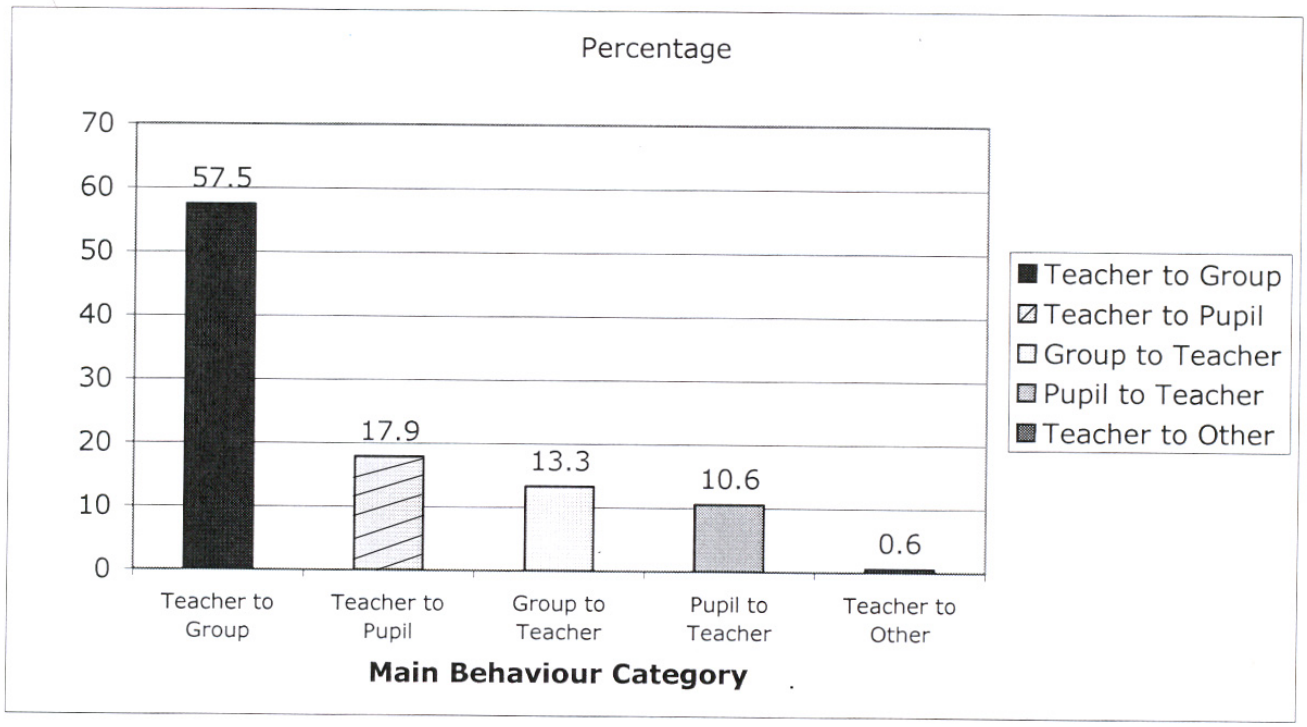

Figure 2: Direction of Communication During the Teaching of Numeracy in Pre-primary Classrooms in Nigeria.

Prevailing Language of Instruction

Tables 3, 4 and 5 provide information on the prevailing language of instruction during numeracy lessons in pre-primary classrooms in Nigeria. As shown in Table 3 and Figure 3, majority of the teachers (79.2%) used English language as the main language of instruction during numeracy lessons while only 20.8% of the teachers used Nigerian language (language of the immediate environment where the school is located) as the main language of instruction.

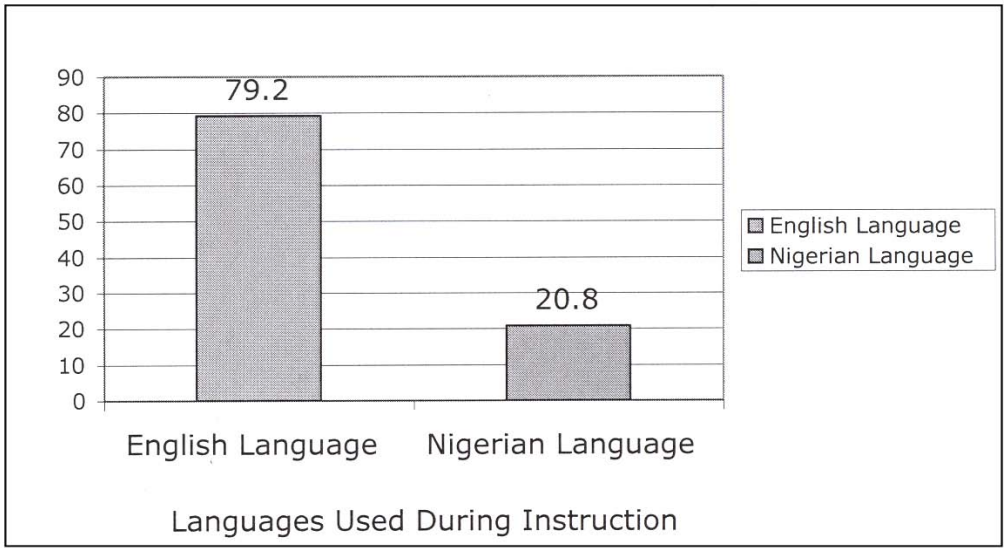

Figure 3: Prevailing Language of Instruction During Numeracy in The Country.

It would also seem, as shown in Tables 4 and 5 as well as in Figures 4 and 5, that most teachers (at least 62.3%) tend to use Nigerian languages to supplement English language, as the main language of instruction, during numeracy lessons whereas 37.15% of the teachers never used Nigerian Language.

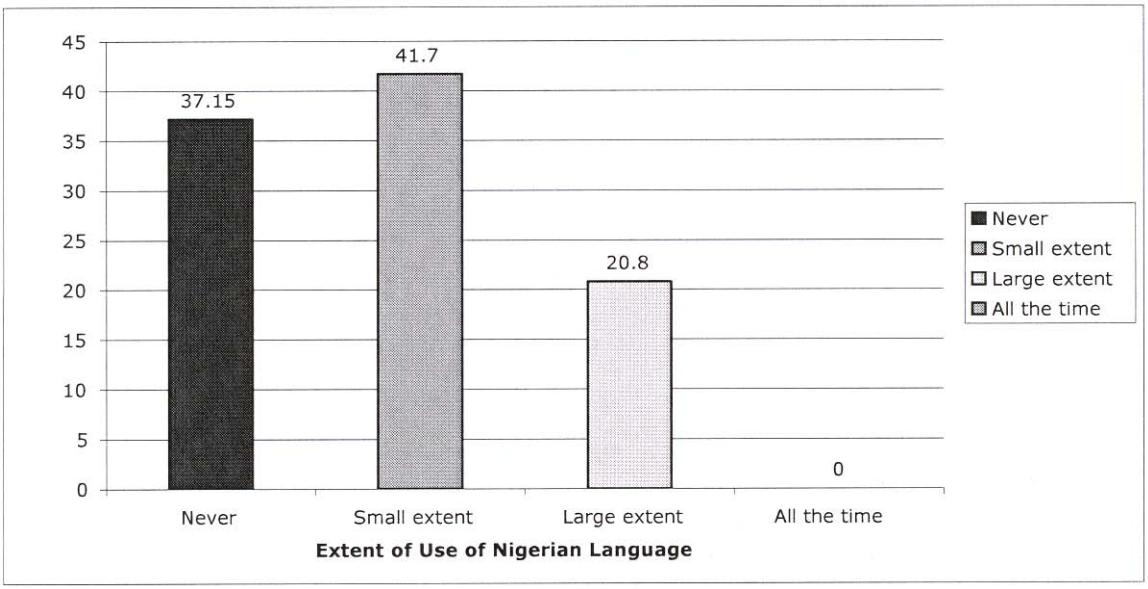

Figure 4: Extent of using Nigerian Language as Language of Instruction.

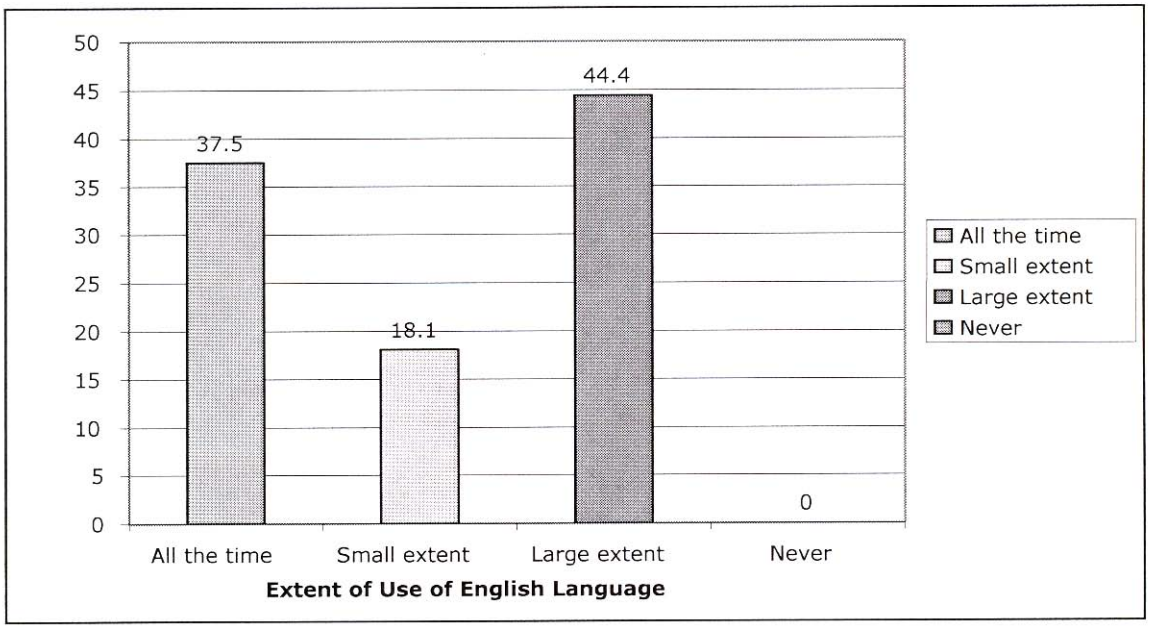

Figure 5: Extent of Using English Language as the Language of Instruction

Group Differences in Use of Instructional Time

The extent to which English language is used during instruction was the grouping factor. This factor was classified into three: small extent; large extent; and all the time. The use of instructional time was also classified into three (time spent on teacher-centered learning activity, pupil-centered learning activity and teacher not facilitating learning activity/confusion). There was significant association between groups (based on the extent of using English Language) in the use of instructional time. As can be seen in table 6, a greater proportion of teachers who used English language to a small extent during instruction, unlike their counterparts who used it all the time or to a large extent, tended to spend more time on pupil-centered and teacher-centered learning activities.

Table 6: Group Differences (Based on Language of Instruction) in Use of Instructional Time

Use of Instructional Time	Use of English Language in Instruction				
	Small extent	**Large extent**	**All the time**	**Total**	χ^2
Teacher Prompting Act.	35	20	7	62	10.48*
Pupil Learning Activity	24	9	5	38	
Teacher Not Facilitating Learning and Confusion	5	8	7	20	
Total	64	37	19	120	

**p< 0.05 non-directional test*

Group Differences in Direction of Communication

The grouping factor (the extent to which English language is used in instruction) was classified into three: small extent; large extent; and all the time. However, the direction of communication was classified into two: one-to-one (Teacher to pupil/Pupil to teacher); and whole class (Teacher to group/Group to teacher). There was significant group association (based on the extent of using English Language) in the direction of communication. As can be seen in Table 7, a larger proportion of teachers who used English language to a small extent during instruction tended to be involved with one-to-one directed communication while a larger proportion of the teachers who used English Language all the time or to a large extent would be more likely to be involved with whole class (group)-directed communication.

Table 7: Group (Based on Language of Instruction) Differences in Direction of Communication.

Direction of Communication	Use of English Language in Instruction				
	Small extent	**Large extent**	**All the time**	**Total**	χ^2
Teacher to Pupil/ Pupil to Teacher (One-to-One)	7	5	6	21	**6.91***
Teacher to Group/ Group to Teacher (Whole class)	6	27	18	51	
Total	13	32	27	72	

**p< 0.05 non-directional test*

DISCUSSION

The pattern of classroom interaction observed in the study, where teacher-centred activity was predominant, and where the communication flow was mainly from the teacher to the whole class with minimal one-to-one (teacher to pupil or pupil to teacher) communication, may not augur well for effective acquisition of numeracy skills by pre-school children. More so, when the pre-school teachers spent a good proportion of the lesson time on "teacher not facilitating learning activities" (e.g. monologue, punishing, using negative reinforcement, etc). Apparently, the result indicates that most of the pre-school teachers observed are yet to move away from the traditional teacher-centred approach to teaching to using the method that would be interactive in nature. The predominant approach used by the teachers appear to be influenced by the empiricists view of learning as stimulus-response were adult leads the child's learning and dominates it with the child viewed as an empty vessel to be filled or a lump of clay to be moulded into shape (Bruce, 1997, p.12). However, research has shown that this process does not promote pupil's learning, interest and curiosity rather it hinders motivation because such uninteresting and dull learning environment makes learners passive and non-involvement tends to undermine the drive in learners to think for themselves (Silberman, 1970; NAEYC, 2001;). This situation should be considered sensitive at this level of education because when pupils become bored, uncomfortable, confused and develop negative attitude towards schooling and learning, they would rather prefer staying in their homes where they are likely to be much more actively involved in interactions with parents, siblings and other relatives. The situation also runs contrary to the objectives of establishing pre-primary education settings in Nigeria which includes: effecting a smooth transition from the home to the school; preparing the child for the primary level of education among others (Federal Republic of Nigeria, 1998).

Children need to be given opportunities to initiate conversation in school settings during instructions. The work of Gordon (1983 cited in Bruce, 1997) has shown the importance of reciprocity in conversations between adults and children. Thus, to ensure that pre-schoolers are not only equipped with the rudiments of numbers but also with critical thinking skills, practicing teachers at this level need to substantially include participatory approaches during teaching-learning activities in numeracy classrooms. Psychologically, the tendency for preschool teachers to be principal actors and talkers in numeracy classrooms could affect learners attitude to doing things (e.g. lack of confidence in oneself and inability to do things in ones way without seeking assistance from adults or significant others). The National Research Council, (2001) argue that advance in cognitive abilities is not likely to take place if children are passive receptacle for knowledge delivered by others. Rather, they are of the opinion that cognitive development takes place in the context of the child's interaction with others and with the environment where the child is a very active participant.

Looking at the pattern of interactions exhibited at the pre-primary level by teachers in a wider societal/cultural perspective, one might infer that the observed teachers and the pre-schoolers could be seen as a reflection of the unequal power relations between adults and children. The Nigerian preschool teachers appear to accommodate the cultural/societal norms for interaction whereby children are to be seen and not heard. Children therefore, when they come to school, may well have inculcated the habit of being active listeners who are always waiting for adults to take the lead in every social interaction. Teachers also being part of the culture and living within the society tend to accommodate this belief and thus transfer it to the classroom settings. Thus, since most of Nigerian children are socialized into active listeners whenever adults have something to say at home, they are likely not to feel at ease in participating actively during instructions in terms of initiating conversations, asking questions or even expressing themselves. Researchers have argued that when teachers are interacting with children at higher levels of involvement, this involvement is positively related to children scoring higher on language development assessment (Whitebook, Howes, & Phillips, 1989: Konstos & Wilcox Herzog, (1997) cited in Wilcox-Herzog and Ward, 2004), Curtis (1997) found that mathematics is learned best when learners are actively participating in interaction during instructions with teachers and peers. Thus, schools should provide opportunities such that the teacher-learner differentiated interaction patterns be less practiced. Instead, the opportunities should encourage an inquiry based curriculum implementation approach where learners will be given the opportunity to initiate activities as well as be at the center stage of interaction during instructions.

The results show that English Language was predominantly used during most of the lessons. This is unexpected considering that the Nigerian National Policy on Education stipulates that the medium of instruction at this level of education be principally the mother tongue or the language of the immediate environment of the pupils.

The results could be attributed to the relatively low social status accorded to the indigenous languages (L1) in a situation where English Language (L2) is the official language. Thus, most parents would want their children to be interacted with in English Language at school. In fact, responses from teachers interviewed during the study fieldwork indicate that the situation is such that parents tend to withdraw their children from schools where mother tongue is used as the medium of instruction. This practice is regardless of the fact that in most Nigerian homes, the pre-school child is not likely to have English spoken around him or her.

However, the government could do more to helping the situation. For instance, the government could consolidate and enforce the policy, which stipulates that Nigerian language of children's immediate environment should be used for instruction in pre-school classrooms. In addition, curriculum developers for mother tongue education have not really been encouraged in terms of material provision and funding. As a result, there is acute scarcity of books for children at the pre-school level in Nigerian languages. It was also observed (during the field work) that at school, the L2 appears to be a restricted code. For instance, during the data collection exercise, it was observed that the wide spread practice by the teachers during instruction was to go straight for English language. However, as the lesson progressed, a good proportion of the teachers tended to resort to the language, which both teachers and children know best (i.e. the language of the immediate environment).

The results also revealed that significant group differences tend to exist in use of instructional time and direction of communication respectively. The group differences, it would seem, were such that the less a teacher uses English language during instruction (i.e. the more the teacher uses Nigerian language) the more he or she is likely to facilitate learning, promote learning-facilitating activities among children as well as one-to-one directed communication (teacher to pupil; pupil to teacher). It has, however, been observed that instructing pre-schoolers using a language which they are not very familiar with and expecting them to think and speak with that foreign language can put enormous pressure on young learners (Helm and Gronlund, 2000). Pressure, according to Jensen(1998) can inhibit thinking as well as the level of active engagement of the learners during classroom interaction. Therefore, since concepts are more easily internalized in the language which the learner knows best, (Obanya, 2004), and since teacher-learner interactions are more easily promoted in situations where all those involved have no inhibitions themselves, it is explicable that teaching-learning activities in L1 is likely to reduce the problems of predominant one sided direction of communication (teacher to pupil) and teacher-centred activities that tend to characterize the teaching of numeracy in pre-school classrooms in Nigeria.

CONCLUSION

The results reported in this study provide an empirical basis for concern that pre-school education program in Nigeria may not be achieving its objectives that focus on inculcating in her children the spirit of enquiry and creativity through exploration as well as on teaching the rudiments of numbers, shapes and forms through play and other types of learner-centered activities. There is therefore a need to review and, perhaps, update the curriculum contents of teacher preparation and continuing education programs (in-service and professional support) in both theory and practice of teaching pre-schoolers. The essence is to produce teachers who can channel most aspects of the lesson time towards facilitating learning tasks at both individual and small group levels without delivering monologues, using negative reinforcement, causing confusion, etc. Such training and retraining programs should also be tailored towards equipping the teachers to master how to facilitate one-to-one communication flow (teacher to pupil and pupil to teacher) as well as how to encourage pupils to initiate activities and participate actively in classroom interactions during numeracy lessons.

More efforts should be made by policy makers and teacher educators to train and retrain teachers to enable them teach preschoolers in the language of their immediate environment. To facilitate this, the Federal government should encourage textbook writers by funding the publication of books written in Nigerian languages and making the books available to preschoolers to use. The government should also endeavour to enforce the policy that children in Nigerian preschool institutions should be taught in the Nigerian language of their school environment. In addition, the Nigerian public, particularly parents, should be reoriented to appreciate the educational benefits of teaching preschool children using Nigerian language of the children's environment.

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Appendix 1.

Table 1.1: Use of Instructional Time During Teaching of Numeracy In Pre-primary Classrooms In Nigeria.

S/No	Behaviour Category	Time (sec)	Percentage of Lesson Period	
A.	**Teacher Whole-Class Activities (Prompting Learning)**			
1.	Writing on the chalkboard	82	6.8	
2.	Demonstrating with materials	21	1.8	
3.	Explaining	96	8.0	
4.	Questioning	86	7.2	
5.	Giving directives	84	7.0	
6.	Getting ready for an activity	27	2.3	
7.	Reinforcing response	43	3.6	**51.2**
8.	Monitoring	37	3.1	
9.	Simulating	17	1.4	
10.	Modelling	8	0.7	
11.	Drawing on the chalkboard	16	1.3	
12.	Story telling	27	2.3	
13.	Distributing textual materials	59	5.0	
14.	Provider answers	8	0.7	
B.	**Pupil-Group Activity**			
15.	Reciting	47	3.9	
16.	Chorus response	60	5.0	
17.	Explaining	6	0.5	
18.	Demonstrating	3	0.2	
19.	Observing	19	1.6	
20.	Reading	49	4.1	**19.8**
21.	Counting	27	2.3	
22.	Singing	11	0.9	
23.	Role-playing	0	0.0	
24.	Structured play	0	0.0	
25.	Identifying	16	1.3	
C.	**Individual Pupil Activity**			
26.	Exploring	0	0.0	
27.	Reciting	3	0.2	
28.	Demonstrating	0	0.0	
29.	Observing	0	0.0	
30.	Questioning	0	0.0	
31.	Reading	16	1.3	
32.	Counting	8	0.7	
33.	Telling stories	4	0.3	**12.3**
34.	Singing	4	0.3	
35.	Writing	60	5.0	
36.	Drawing	5	0.4	
37.	Identifying	15	1.3	
38.	Painting	4	0.3	
39.	Free-flow play	0	0.0	
40.	Role play	0	0.0	
41.	Copying from the chalkboard	30	2.5	
D.	**Teacher Not Facilitating Learning**			
42.	Monologue (Teacher talking non-stop)	89	7.4	
43.	Pupils asked to shut up (silence)/ stop moving around	7	0.6	
44.	Punishing	11	0.9	
45.	Using negative reinforcement	3	0.2	**15.4**
46.	Not reinforcing correct response	15	1.3	
47.	Demonstrating without materials	2	0.2	
48.	Discussing with a visitor	3	0.2	
49.	Conversing with another teacher	5	0.4	
50.	Leaves the class unannounced	2	0.2	
51.	Grading work	46	3.8	
52.	Distracts attention (e.g. cell phone rings)	3	0.2	
E.	**Confusion**			
53.	Class disorganized	7	0.6	**1.3**
54.	Children wandering aimlessly	6	0.5	
55.	Children fighting	3	0.2	