

DEVELOPMENT AND VALIDATION OF CLASSROOM INTERACTION INSTRUMENT FOR PRE-PRIMARY AND PRIMARY LEVEL OF EDUCATION IN NIGERIA

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Abstract: Classroom Interaction behaviours at the pre-primary level of education especially in Nigeria is still a relatively new concept. Thus, there seem to be no instrument to measure the nature as well as quality of such activities between teachers and learners during instruction. These could be partly the reasons why there is dearth of information on this aspect of preschool activities in Nigeria. The foregoing therefore, underscores the need to develop and validate an instrument (PCIEI) which has the capacity to provide information on typical expected teachers –learner interaction patterns at the pre-primary level of education especially in Nigeria. The instrument was used in three states to observe 36 lessons delivered by 36 teachers in 12 preschool classrooms during instructional delivery in three subject areas (Numeracy, Introduction to letters of the alphabet and Science). 1528 preschoolers were involved in the study. Four research questions were answered using the instrument. Cronbach's Alpha and Scott's Pie were used to establish the validity and reliability estimate of the instrument (0.85 and .93 respectively). The internal consistency of the items (Cronbach's Alpha) ranged from .848 to .854 respectively. The classroom interaction behaviours identified include Teacher Prompting Learning Activity, Pupil whole-class Activity, Individual Pupil Activity, Monologue, Teacher not facilitating learning, Confusion. These characteristics were considered very important in producing valid, comparable and generalizable preschool interaction patterns in Nigerian. This is because, the items used are acceptable classroom behaviours which of teachers and learners are expected to exhibit at this level for quality teaching-learning activities to occur.

Keywords: Development, Validation, Reliability, Classroom Interaction, Pre-primary.

INTRODUCTION

Classroom interaction in this study is seen as behaviours exhibited by both the teacher and the learners during teaching-learning activities in preschool classroom setting. Such behaviours could be in form of communication between teacher and learners in small groups or with the entire class as well as learner - learner, learner-material and teacher-material (Curtis, 1997). Such actions could also be exhibited through face-to-face action which can be either verbal, channelled through written or spoken words, or non-verbal, channelled through touch, proximity, eye-contact, facial expressions, gesturing, among others (Willson 1999). 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 (Bowman, Donovan and Burns, 2001; Smith and Dickson 1994). For instance, Smith and Dickson (1994) found that the amount of cognitively challenging talk that children experience is correlated with the amount of time they talk with adults. In addition, it is generally believed that because

so much basic early learning (for example, language, social-emotional competence) occurs through interactive experiences when children are very young (Kontos and Wilcox-Herzog, 2002), the quality of teacher-child interactions contributes substantially to effects that pre-school education have on children (Bowman, Donovan, & Burns, 2001). Fu (2004) also, is of the opinion that knowledge and understanding are constructed through social interaction and that classrooms should be seen as social places where teachers and learners negotiate the curriculum. As a result, teachers are expected to construct their teaching and learning environment in such a way as to give equal opportunities to both parties to participate activity. Guided participation in the activities of children should be the teacher's role, while play and expression of ideas through interactions with adults, peers, and the environment should be the primary business of the children (Fu, Stremmed and Hill, 2002).

Pre-school advocates recommend some methods which could be used by practitioners during teaching-learning process at this level. Such methods include: teacher-child interaction during which the child is actively involved (Vandeyar and Killen, 2006; Wilcox-Herzog and Ward, 2004) learning by doing, inquiry/curiosity and interest, exploration, experiment and discovery, natural active hands on experience, (Yoon and Onchwari 2006; Arnone 2003; Glauert, Heal and Cook 2003). Further, Delpit, (1995) is of the opinion that teacher directed approaches also yields good results whereas learning through storytelling, through prints, rhymes and songs were seen as better approach (Howes, James, and Ritchie, 2003; NAEYC, 2002).

Using questioning method during teaching-learning processes has also been acknowledged as a very important way of encouraging learner active participation (Cotton, 2004; Elkind 1999). According to them, questions could be teacher or learner initiated. Cotton (2004) is of the view that in classroom settings, teachers' questions are defined as instructional cues or stimuli that convey to students the content elements to be learned and directions of what they are to do and how they are to do it. Elkind (1999) on the other hand sees early childhood years as a question asking period but noted that how adults react to these questions could either deter them from asking further questions or accomplish the important goal of encouraging further questioning while providing a sense of being understood. He further stressed that teachers/adults can always turn a child's question around and asks the child what the child thinks (opinion question).

Another method advocated for effective teaching - learning processes in pre-school is through play. Play is generally considered by educators (Tizard and Huges, 2002; Aremu, 2000; Lerach, 2003) as one of the most effective ways of helping children to learn during the pre-school years. Whitebread (1996) stresses this view further when he argues that observing children at play shows the reason why it is regarded as a powerful learning medium. He argues that during play children are usually totally engrossed in what they are doing, set their own level of challenge, and that what they are doing is always developmentally appropriate to the extent that tasks set by adults will ever be.

On the other hand, other researchers such as Myhill (2002), Hayes (1999) and Ayers, 1996) suggested the use of whole-class, small group, and one-to-one teaching approaches. A teacher may have opportunity of interacting with children on a one-to-one basis during regular monitoring of lesson progress and as he/she provides attention to learning needs of specific children (Ayers, 1996; Goldthorpe, 1998). A one-to-one teacher interaction with children is expected to make the child progress in his/her learning considering the views of Hayes (1999) that one-to-one interaction provides opportunity for a child to: receive individual help; ask the teacher questions without publicly exposing his or her ignorance; be closely and accurately monitored; and develop a close relationship with the teacher.

Nevertheless, the importance of using the small group teaching approach in children's classrooms (dividing of the learners into groups of fives and tens) has been emphasized in teaching methodology literature (Biot and Easen, 1994; Lloyd and Beard, 1995). Curtis, (1997) also noted that using small group context during teaching-learning activities in early years encourages social interaction among learners as well as building confidence. To him, small group sessions tend to make or force learners to participate actively. It appears to be more stimulating, provocative and exciting. He argued that this could guarantee learning.

However, whole-class teaching, would require different skills from one-to-one and group work (Ofsted, 1993b; Kutruck, 1994). The teaching approach is considered important because, according to them it is seen as an efficient means of transmitting information to a large number of children simultaneously. There is also evidence (Ofsted, 1998) that frequent use of the whole-class teaching approach is useful in raising standards in literacy and numeracy among children. The use of this approach is also seen as an economical way to enable the teacher with a large class carry as many pupils as possible during instruction. The positive effect of such interaction in the course of children's activities cannot be over emphasized. This is because such interactions could provide a context for much social and cognitive learning: knowledge, skills, desirable disposition and feelings as emphasized by early childhood educators as well as researchers (Katz, 1993).

Irrespective of the concerns, policies and government agendas for this level of education in Nigeria since 1977 when it was included in the Nigerian National Policy on Education, there have been no empirical study which focus on characteristic and quality of instruction provided to young children in Nigerian pre-school settings. What seem to be

available is research that focused on outcome variables such as creating friendly environment for the Nigerian child (Onuka, 2004; Ndukwu, 2002; Abidoye, 1998); and a report on the ten states that are jointly sponsored by UNICEF/FGN (1993), among others. In addition, researches on how teachers interact with students during teaching-learning situations in Nigerian school settings seem to be conducted only at the primary and secondary school levels (ESA/UNESCO, 2003; Okebukola, 1998; UNESCO, 1998).

The foregoing therefore, underscores the need to develop and validate an instrument which has the capacity to provide information on typical expected teachers –learner interaction patterns at the pre-primary level of education especially in Nigeria. Specifically, this paper will provide answers to the following research questions.

Research Questions

1. What are the typical expected teachers –learner behaviours to be exhibit during instructional delivery processes in pre-school classrooms in Nigeria?
2. To what extent do the items generated measure the construct it was designed to measure?
3. What is the reliability level of the instrument?
4. What are the ethical issues considered?

METHODOLOGY

Defined Target Population/Subject Areas of Interest

The target population for this study comprised Nigerian practicing pre-school teachers of children aged three to five years old (Nurseries 1, 2 and 3 classes) and the preschoolers. In addition, the subject areas observed when establishing the validity and reliability estimates include introduction to literacy, numeracy, and science skills. These three subjects were focused on because they are the major subjects that cut across the curriculum of preschool education in Nigeria and because of their importance in aiding learning in other subject areas. Further, to function effectively in the 21st century, Nigerian children need good exposure to high quality literacy, numeracy and science related activities.

Sampling Procedure

The country, was stratified along the three major regions: Eastern, Western and Northern. Each of the regions has special characteristics as depicted by the socio-political history, geographical location, cultural orientation, educational development, linguistic propensity and religious background (Bajah, Onocha and Okpala 1985) and thus may affect classroom behaviours of teachers and learners. Purposive sampling was used to select a state from each region, preferably the oldest existing state. This is because these states tend to depict the special characteristics of each region. The states selected from each of the 3 regions are Enugu, Oyo, and Kaduna states for the Eastern, Western and Northern regions respectively.

Simple random sampling was used to select four schools from each state making a total of 12. The schools and classes/teachers were selected as follows:

- Four pre-schools were selected from each state in this order: 2 schools from urban locations (1 private and 1 public), and 2 from rural locations (1 private and 1 public). The rationale behind this was to ensure equal representation in terms of urban and rural as well as ownership of schools (private those owned by individuals/Non-Governmental Organisation and public- those owned by the government).
- In each selected school, care was taken to ensure that the nursery classes were represented (nurseries 1 – 3). The teachers and the pre-schoolers in the classes selected constituted the study sample.

Sample

In all, the sample size consisted of 1528 pupils aged 3 to 5 years as well as 36 teachers in 36 classrooms in 12 pre-primary institutions in both private and public pre-schools and in urban and rural locations across the three major old regions in the country. School subjects observed were introduction to literacy, numeracy and science.

Description of the instruments

The Preschool Classroom Interaction Evaluation Instrument (PCIEI) is an adaptation of the Classroom Activity Sheet (CIS) developed by Yolo (1978) for observing classroom interaction patterns. The (PCIEI) was designed to evaluate the Pre-primary interaction patterns in classroom settings. The instrument is aimed at determining the quality of instructional delivery modes, monitoring the teachers' behaviour patterns in the classroom and finding out if the preschoolers are taught using the recommended methods. It is a category system observation instrument and thus provides information on the frequency and sequence of classroom behaviours.

In this regard, the areas of interest of this study include describing the process variables existing in Nigerian pre-schools in terms of instructional modes (nature of teacher-pupil interaction, class context). The main feature of this instrument is the use of structured observational method to generate data. To arrive at this, the researcher had to define the behaviour categories of interest prior to commencing, include them as items in the instrument, and then during teaching-learning activities checkmark (✓) those behaviours in a consistent manner.

The PCIEI consists of two sections: A and B. Section A solicited information on date and observation number, class observed, state, school number, location and type, teacher gender, subject taught, duration of lesson and class size and management. Section B solicited information on seven main behaviour categories that are placed besides columns of cells. They include Teacher Prompting Learning Activity, Pupil whole-class Activity, Individual Pupil Activity, Monologue, Teacher not facilitating learning, Confusion and Others. The PCIEI is attached as Appendix 1.

Data Collection Procedure when the instrument is used

Researchers intending to use this instrument can only obtain a valid and reliable result through the conduct of a comprehensive observation. It is recommended that the researcher spends at least 20 minutes (first 10 minute at the beginning of the lesson and the last 10 minutes towards the end of the lesson) in any class during the observation. That is, if the observer does not intend to cover a full lesson period. During the observation process, the observer is expected to record the most frequently occurring behaviour exhibited by both the teacher and the learners being observed. The behaviours are the items listed in the rows whereas the boxes in the columns indicate the time during which the behaviour was exhibited during the teaching-learning activity. To record the behaviour that is prevalent, the observer will read each row of indicators and checkmark (✓) in the column (one box) in a continuous manner as the lesson progresses. Any of the items in the row can be check marked regardless of where it is placed. However, the boxes in the column are checked in a progressive form.

Thus, under no circumstances should the observer checkmark column 7 before column 6 preceding it. If there is a behaviour exhibited which does not correspond with the itemized ones in the row, record it against 'others' in behaviour category 7. All those information recorded provide the evidence for the level of interaction characteristic of the teachers and the learners observed. Instructional time will be classified according to teacher instructional behaviour, teacher non-instructional behaviour and children behaviour. For a particular teacher, the observations should be focused on subject areas of interest. Each observation/lesson in a subject area should last continuously for 10 minutes and could also be used for observing a whole lesson with 30 minutes duration.

Observer Effects

Using observation method as a data collection device in a study of this nature requires that the observer be present in classrooms with the subjects to be observed. This action was not only an intrusion into the privacy of

other peoples' work life, but also raised the question of whether the very presence of the observer in the classroom environment had serious distorting effects on what was observed. This could lead to the teachers and pupils exhibiting unnatural and untypical behavioural patterns due to the presence of the observer (Tizard and Hughes, 2002; Kerlinger and Lee, 2000). However, most researchers who are experienced at conducting observational studies with children, for instance, Tizard and Hughes (2002), believe that the effect of the observer is minimal. Their experience in nursery had revealed that after an initial acclimatization period, young children, usually under-fives, tend to ignore the observer. Consequently, the investigator sought ways to reduce the possible impact of the fore-listed source of methodological challenges. To suppress the effect of the observer, the implementation of the study required the observer to pay prior visits to the teachers and pupils in their classroom settings. Such visits helped the observer, the teachers and children to get use to one another before the real observation days, thus, making the preschoolers pay minimal attention to the observer's presence during the actual lesson observations.

Data Reduction/Management

In order to reduce the data to a manageable size, the evidence collected with the PCIEI were summarized in a format that SPSS can understand. A codebook was prepared. This involved defining and labelling each variable (i.e. listing all the variables in the questionnaire and giving them labels that were used in SPSS) and then assigning numbers to each. These numbers do not have magnitude but were used for identification.

RESULTS

Research Questions 1: What are the typical behaviours teachers and learner are expected to exhibit during instructional delivery processes in pre-school classrooms in Nigeria?

The typical expected teacher-pupils classroom behaviours identified were placed beside seven main behaviour categories. They include:

1. **Teacher Whole-class Activity:** 12 sub-categories were generated. They include working with entire class, demonstrating with materials, demonstrating without materials, giving directives; working with individual pupil, explaining, questioning, getting children ready for an activity, working with groups, drawing on the chalkboard, providing the answer and using negative reinforcement.
2. **Pupils Learning Activity:** 12 sub-categories were generated. They are exploring, demonstrating, silence, reading, singing, role-play, structured play, questioning, telling stories, writing, drawing and painting.
3. **Individual Pupil Activity:** 15 sub-categories were generated. They include exploring, demonstrating, observing, questioning, reading, telling story, singing, writing, drawing, painting, free-flow play, role play, silence.
4. **Teacher Not Facilitating Learning,** 9 sub categories were generated. They include Monologue, punishing, teacher discussing with visitor, teacher talking non-stop, pupils asked to shut up and either listen/observe and teacher not questioning, teacher conversing with another teacher, teacher walks out of the classroom, distracting attention e.g. telephone rings and announcement.
5. **Confusion,** 4 category were generated. They include noise, teacher grading work, children wandering aimlessly two pupils fighting.

Generating the Items

Generating the items involved organising series of interview schedules with practicing teachers, section heads, instructors of pre-school teachers in training; including those activities that were suggested by pre-school advocates; using investigators personal experiences; research findings and analysis of scholars; including

classroom behaviours indicated as usual and expected practices during instruction identified by pre-school educators, researchers and textbook writers (Akinbote, et al, 2001; Myers, 1993; Kutnick and Rogers, 1994) opinion and consulting the core curriculum for Nigerian pre-primary schools (meant for ages 3–5). In addition, six lessons were observed in three nursery classrooms and also three primary classrooms to find out if there were some behaviours that were typical of nursery/primary classes that were not included and if there were those included that were not typical of their class activity.

Research Questions 2: To what extent do the items generated measure the construct it was designed to measure?

a. Revision and Selection of Items (*Face and Content Validity of the Instrument*)

The draft of the PCIEI (consisting of 72 items) was given to seven practicing pre-primary and primary school teachers with varied years of teaching experiences, two lecturers and four students with preschool education background for constructive criticisms on the items using a structured format where they were expected to indicate what they thought about an item (good, modify slightly, modify greatly, delete). After they had gone through the items, some items were selected and new ones also suggested to be added. Among the alterations made was to increase the main behavior categories from five to seven. For an item to be selected, enough care was taken to ensure that the item is not vague, ambiguous and double-barreled, but consistent with the construct under study. Alterations made include:

- *Under Behaviour Category 1*, Teacher Whole-class Activity was changed to Teacher Prompting Learning Activity and ten new sub-categories were added. They include (a) teacher writing on the chalkboard (b) giving directives (c) getting pupils ready for an activity (d) reinforcing response (e) monitoring (f) prompting (g) drawing (h) telling children a story (i) distributing textual materials (j) modelling.
- *Under Behaviour Category 2*, Pupils Learning Activity was changed to Pupil Whole-class Activity. Secondly, five new sub-categories were added. They are (a) reciting (b) chorus response (c) observing/listening (d) counting (e) identifying.
- *Under Behaviour Category 3*, Individual Pupil Activity, six (6) new sub-categories were added. They include (a) reciting (b) counting (c) copying from the chalkboard (d) identifying (e) silence (f) manipulating. Demonstrating was used to replace manipulating. This is because demonstrating describe better what the teachers did with these pupils in the classroom during teacher learning activities in terms of trying to explain or show how to do something or how something works.
- *Behaviour Category 4*, here, Monologue was made a main behaviour category with the following items forming its sub-categories; (a) teacher talking non-stop (b) pupils asked to shut up and either listen/observe (c) teacher not questioning was added.
- *Behaviour Category 5*, Teacher not Facilitating Learning has its sub-categories reduced to eight (9). The ones retained include punishing, using negative reinforcement, not reinforcing correct responses, demonstrating without materials, teacher discussing with a visitor, teacher conversing with another teacher, teacher walks out of the classroom, announcement, and distracting attention e.g. telephone rings.
- Under Behaviour Category 6, Confusion, only one sub-category was added (a) two pupils fighting and
- Other, here the observer is allowed to record any other activity which did not fall within 1-6.

Other major alterations were made in terms of removal of some already included items in the instrument. For instance, Pupil learning activity (i.e. Behaviour Category 2) was changed to Pupil Whole-Class Activity. The term, learning, was removed because it could not be substantiated whether the pupils have learnt or not since the study would not be administering a test on the pupils after the lesson to find out how much they have learned as a result of being exposed to the lesson. Again, under this category, 5 sub-categories were removed. They include; (a) questioning (b) telling stories (c) writing (d) drawing and (e) painting. The reason for their removal was that these actions could only take place at individual level. In other words, an entire class cannot ask the teacher a question, nor can they all tell a story at the same time. Writing, drawing and painting activities were also considered as actions, which can only occur at the individual pupil level. For instance, when a teacher gives a directive to the entire class to write paint or draw what he/she had on the chalkboard, individual writing materials (exercise book and pencils) were distributed and each pupil did those activities in their respective exercise books. In all, five (5) original sub-behaviour categories were removed from the Pupil Group Activity level but were retained at the Individual Pupil Activity level. In all, the PCIEI has 7 distinct but mutually exclusive sub-categories. Summary of the selected items are as shown in Table 1.

Table 1: Summary of the contents of the modified version of the CIS Major and Sub-behaviour Categories

S/N	Major Behaviour Category	Sub-Behaviour Category
1.	Teacher Whole Class Activity	Working with the entire class, Writing on the chalkboard, Demonstrating with materials, Working with individual pupils, Explaining , Questioning, Giving directives, Getting children ready for an activity, Reinforcing correct responses, Monitoring, Prompting/Stimulating, Working with groups, Modelling, Drawing on the chalkboard, Storytelling, Distributing textual materials, Provides answer
2.	Pupil-Group Activity	Reciting, Chorus response, Exploring, Demonstrating, Silence, Observation, Reading, Counting, Singing, Role-playing, Structured play, Identifying
3.	Individual Pupil Activity	Exploring, Reciting, Demonstrating, Observing, Questioning, Reading, Counting, Telling a story, Singing, Role-playing, Copying from the chalkboard, Silence
4.	Monologue	Teacher talking non-stop, Pupils asked to shut up/stop moving around, Teacher not questioning.
5.	Teacher not Facilitating Learning	Punishing, Using negative reinforcement, Not reinforcing correct responses, Demonstrating without materials, Teacher discussing with a visitor, Conversing with another teacher, Announcement, Leaves the classroom unannounced, Distracts attention (cell phone rings, etc).
6.	Confusion	Noise, Children wandering aimlessly, Pupils fighting, Teacher grading work
7.	Others	Any other behaviour outside 1 – 6.

Determining the internal consistency of the items

Further, to establish the internal consistency of the items, thirty-six lessons were observed (delivered by 36 different teachers in 3 subject areas) in twelve pre-primary and primary school classrooms using the instrument. The ages of the children involved ranged from 3 to 7⁺. On the whole, a Cronbach's Alpha of .850 was obtained. All the items with positive correlation were regarded as contributing much to the construct, as a result were selected while those with negative correlation were eliminated. This gave rise to the final version of the instrument which consists of 59 classroom interaction items. The contributions of each of the 59 items are shown in Table

Table 2: Summary of the contents of the modified version of the CIS Major and Sub-behaviour Categories

S/N	Major Behaviour Category	Sub-Behaviour Category
1.	Teacher Whole Class Activity	Working with the entire class, Writing on the chalkboard, Demonstrating with materials, Working with individual pupils, Explaining , Questioning, Giving directives, Getting children ready for an activity, Reinforcing correct responses, Monitoring, Prompting/Stimulating, Working with groups, Modelling, Drawing on the chalkboard, Storytelling, Distributing textual materials, Provides answer
2.	Pupil-Group Activity	Reciting, Chorus response, Exploring, Demonstrating, Silence, Observation, Reading, Counting, Singing, Role-playing, Structured play, Identifying
3.	Individual Pupil Activity	Exploring, Reciting, Demonstrating, Observing, Questioning, Reading, Counting, Telling a story, Singing, Role-playing, Copying from the chalkboard, Silence
4.	Monologue	Teacher talking non-stop, Pupils asked to shut up/stop moving around, Teacher not questioning.
5.	Teacher not Facilitating Learning	Punishing, Using negative reinforcement, Not reinforcing correct responses, Demonstrating without materials, Teacher discussing with a visitor, Conversing with another teacher, Announcement, Leaves the classroom unannounced, Distracts attention (cell phone rings, etc).
6.	Confusion	Noise, Children wandering aimlessly, Pupils fighting, Teacher grading work
7.	Others	Any other behaviour outside 1 – 6.

Table 3: Internal Consistency of Classroom Interaction Monitoring Sheet

S/N	Classroom Interaction Items	N	Mean	SD	Cronbach's Alpha
A	Teacher Prompting Learning Activity				
1	Working with the entire class	59	1.42	.498	.855
2	Writing on the chalkboard	59	1.53	.504	.855
3	Demonstrating with materials	59	1.25	.439	.854
4	Working with individual pupil	59	1.02	.130	.852
5	Explaining	59	1.61	.492	.852
6	Questioning	59	1.31	.464	.844
7	Giving Directives	59	1.36	.483	.850
8	Getting children for activity	59	1.37	.488	.844
9	Reinforcing correct response	59	1.56	.501	.847
10	Monitoring	59	1.42	.498	.851
11	Prompting	59	1.31	.464	.844
12	Working with groups	59	1.24	.429	.847
13	Modelling	59	1.17	.378	.846
14	Drawing on the chalkboard	59	1.07	.254	.850
15	Story Telling	59	1.20	.406	.848
16	Distributing textual materials	59	1.25	.439	.849
B	Pupil whole-class Activity				
17	Reciting	59	1.10	.305	.850
18	Chorus response	59	1.54	.502	.852
19	Exploring	59	1.42	.498	.855
20	Demonstrate	59	1.53	.504	.855
21	Observing	59	1.02	.130	.852
22	Reading	59	1.66	.477	.847
23	Counting	59	1.31	.464	.844
24	Singing	59	1.07	.254	.853
25	Role play	59	1.05	.222	.852
26	Structured play	59	1.32	.471	.851
27	Identifying	59	1.42	.498	.851
C	Individual Pupil Activity				
28	Exploring	59	1.31	.464	.844
29	Reciting	59	1.24	.429	.847
30	Demonstrating	59	1.17	.378	.846
31	Observing	59	1.07	.254	.850
32	Questioning	59	1.20	.406	.848
33	Reading	59	1.25	.439	.849
34	Counting	59	1.10	.305	.850
35	Telling story	59	1.12	.326	.848
36	Singing	59	1.03	.183	.849
37	Writing	59	1.08	.281	.850
38	Drawing	59	1.42	.498	.846
39	Identifying	59	1.05	.222	.849
40	Free-flow play	59	1.42	.498	.846
41	Role play	59	1.05	.222	.849
42	Copying from the chalkboard	59	1.15	.363	.848
43	Silence	59	1.14	.345	.849
D	Monologue				
44	Teacher talking non-stop	59	1.37	.488	.847
45	Pupils asked to shut up/stop moving around	59	1.53	.504	.848
46	Teacher not questioning	59	1.29	.457	.851
E	Teacher not facilitating learning				
47	Punishing	59	1.41	.495	.846
48	Using negative reinforcement	59	1.17	.378	.849
49	Not reinforcing correct response	59	1.39	.492	.845
50	Demonstrating without materials	59	1.08	.281	.850
51	Teacher discussing with a visitor	59	1.17	.378	.851
52	Conversing with another teacher	59	1.05	.222	.849
53	Leaves the class unannounced	59	1.15	.363	.849
54	Announcement	59	1.15	.363	.848
55	Distracts attention (e.g. Cell phone rings)	59	1.05	.222	.849
F	Confusion				
56	Noise	59	1.15	.363	.848
57	Children wandering aimlessly	59	1.14	.345	.849
58	Two pupils fighting	59	1.03	.183	.853
59	Teacher grading work	59	1.05	.222	.853
G	Others (any other activity outside 1-6).	59	1.05	.222	.854

Research Questions 3: What is the reliability level of the instrument?***Establishing the Reliability Values of the Instruments***

Generally, it is problematic establishing the reliability of observational measures, for two reasons: the behaviour of the person being observed may change from time to time; and the perception of the observer may fluctuate thereby introducing bias in the measurements (Kerlinger and Lee, 2000). To reduce these problems, intra-observer and inter-observer reliability are usually determined for observational data. Intra-observer refers to the consistency of observational data obtained by an observer from repeated observation of the same behaviours over a period of time. On the other hand, inter-observer reliability refers to the consistency of observational data obtained by more than one observer. These two approaches required rigorous training sessions to be organized for the observers.

However, for the purpose of this study, the inter-rater observer reliability was the most appropriate and was therefore used to establish the reliability estimate of the instruments. The researcher and one other observer trained with the modified PCIEI before estimating the inter-rater reliability. The training was done in stages. Stage one started with some discussion on the categories, followed by memorization of the categories by the observers and lastly observing and check marking (✓) classroom behaviours in already prepared videotapes. The second stage of the training had to do with visiting pre-primary classroom settings with the instrument to have real life observations. Each observation was recorded. After each real life observation, practices were also done with the tapes. Recording with tapes gave us the opportunity of viewing and stopping the tape to discuss each category classification. The preliminary stages of the training revealed that classroom observation involves as Flanders (1970) noted, some judgments that are not as objective, automatic and as easy as thought.

It was also needed to establish ground rules, which served as a guiding principle to ensure consistency when choices occurred. The rules include agreeing on the speed and number of tallies expected for each instrument. For instance, it was agreed that no rater should have more than six tallies per minute (behaviour is therefore expected to be coded after every ten seconds). Therefore, a total of sixty strokes are expected at the end of every ten minutes.

The third stage was the trial testing of the instrument in real life classrooms. Observations were conducted in 12 pre-primary and primary school classrooms in both private, public, rural and urban locations. During this exercise, 12 observations each were conducted in 3 subject areas, Mathematics, English, and Science. In all, the two observers conducted 36 observations each making a total of 72 observations. After each trial-testing exercise, the data were analyzed with a view to estimating the reliability level of the observations. The observers discussed the discrepancies found such that subsequently; they would interpret the behaviour categories the same way. The training lasted for 12 days.

The statistical analysis used for establishing the reliability estimate was the Scott's (1955) coefficient formulae also known as Scott's pie cited in Okpala and Onocha (1995). *Scott's coefficient 'p'*, method is a popular method for determining the reliability of observational data. Though other means for establishing reliability estimate are bound, they were found less appropriate and harder to calculate. Therefore, a decision was taken to use the one that is as simple and quick to calculate as possible and more appropriate for the purpose of the information wanted. The major benefits for using Scott's "pi" method, as noted by Flanders (1979), are that the method is unaffected by low frequencies, can be adapted to per cent figures, can be estimated more rapidly in the field, and is more sensitive at high levels of reliability. Scott calls this coefficient "pi" and is determined by using this formula:

$$\pi \frac{Po - Pe}{1 - Pe}$$

where

Po is the proportion of the agreement observed and Pe is the proportion of agreement expected by chance (which is found by squaring the proportion of the tallies in each category, summing these over all categories and dividing by 100).

Thus, Pe is estimated using the formula:

$$\therefore Pe = \frac{(\% \text{ of A} + \% \text{ of B})^2}{2}$$

Inter-rater Agreement of the Instrument

The final trial testing results produced reliability estimates of 93% (Literacy), 94% (Numeracy) and 94% (Science). The summary of the reliability estimates calculated during the twelve observation periods is as shown in Table 4.

Table 4: Percentage of observers' agreement for PCIEI

School No	Subjects Observed		
	Literacy	Numeracy	Science
School 1	58	54	60
School 2	64	68	68
School 3	60	65	68
School 4	76	83	84
School 5	75	84	79
School 6	78	81	80
School 7	84	78	82
School 8	83	78	80
School 9	80	82	80
School 10	82	82	83
School 11	86	84	84
School 12	93*	94*	94*

** Figures used for the final reliability estimate*

A critical look at the inter-rater reliability estimates achieved during the 12 observations show that errors or discrepancies tend to decrease with increasing practice as well as discussions on the views of the ratters after each observation with the instrument.

RESEARCH QUESTION 4: What are the ethical issues considered?

The ethical issues considered here include the researcher's code of conduct, which guided and controlled the level of intrusion into the lives of the respondents. Ethical issues while researching with children in educational settings in Nigeria are not considered even when it appeared in the UN legislation on children, most notably Article 12 of the UN Convention on the rights of the child. This might be based on ways in which Nigerians see and view children's opinions (Maduabum, 2001; Uka, 1966) and also in collaboration with Punch's (2002) view that ways in which researchers see children affect the way they seek and listen to their opinions. Nigerian children grow up in a society where children are seen and not heard. However, the researcher's exposure to a course of study at the University of Edinburgh 'Listening to Children, research and consultations' served as an eye opener on the need to get children involved on matters that concern them. In addition, the growing literature (Punch, 2002; David, Edwards, Alldred, 2001; Hurley and Underwood, 2002) on ethical issues in research with children drew my attention to this requirement.

More specifically, the ethical issues that were considered included:

- Informed consent,
- Anonymity, and
- Confidentiality.

Informed Consent

Issues that border on getting informed consent involved acquainting the gatekeepers (Punch, 2002) at the information collection sites that one used on how one wanted to go about generating the data, when and then sought their approval. Seeking consent required getting permission first from the researcher's place of work. This involved, getting a letter of introduction which included information such as name of the researcher, the nature of the research (title and aims), target audience and the extent to which the children and their teachers will be involved, numbers of schools to be covered, areas of coverage (urban, rural), school type represented (public and private pre-schools), and length of time to be spent in every school. With the letter, the researcher introduced herself to the gatekeepers and explained the purpose of her visit. A copy of the instrument used was also given to them to scrutinize and the method of information collection discussed.

Since the target population for this study is preschool and primary pupils and their teachers, consent was sought through a lot of key stakeholders in the education sector in Nigeria. Considering that the country's system of government has three tiers; the Federal, the State and the Local Government levels, permission was sought along these levels through their respective education departments. At the Federal Government level, the office of the Minister of education was informed through the Universal Basic Education (UBE) Commission; the unit in charge of pre-primary and primary education. When permission was granted at this level, the researcher was allowed to seek the consent of the education office at the State Government level. In each State used, approval was given through the State Primary Education Board (SPEB), the department in charge of education matters for both pre-primary and primary levels. At the Local Government Level, consent was sought through the Local Inspectorate of Education (LIE). When permission was granted, lists of schools registered and approved by them were collected and those to be used were randomly selected.

In each of the selected schools, permission was sought through the head teacher and the teacher whose classes were selected. The process of seeking permission involved discussing with the head teachers and the class teachers the essence of the research work particularly how the research will help to improve the quality of instructional delivery in pre-school classrooms in Nigeria. Further explanations were given on the nature of observation in terms of length of time spent and the kind of instruments (PCIEI) used. The fieldwork only took place in the selected schools that consented to the details of the data collection procedure. However, care was taken not to tell them of the day when the observation would take place. This is to reduce artificiality (producing very unnatural and untypical interaction patterns).

The consent of parents of the children whose classes were used was obtained through the schools. Letters were written to the parents via the schools, duly signed by the head teacher and the class teacher and delivered by the children. About 94% of the parents allowed their children to participate. It is believed that the vulnerable nature of the children made it impossible for them to give approval on whether to participate or not. The children's consent was sought in a whole class by explaining to children the purpose of the visit and how I intended to carry out the research process. The researcher concluded by letting the children know that it was not mandatory that they take part that whoever wished not to take part could decline. In addition, the children's consent was also sought through their respective parents as well as head teachers and class teachers who served as their gatekeepers, in terms of protecting them from harm and exploitation while in school (Masson, 2002; Punch, 2002).

Anonymity and Confidentiality It was ensured that respondents were not identified either by location or school type while writing up the report for dissemination. Therefore, explanations were given to the gatekeepers on how the identities of the schools and teachers used were anonymized. Details of how to ensure that the information gathered would be disclosed in such a way as to protect the identities of those who provided it were discussed. For instance, distinctive features such as numbers and letters were used to hide the specific identities of schools and individuals who provided the research information.

CONCLUSION

This paper guided the generating of data used in discussing the interaction patterns prevalent in Nigeria pre-school settings. What a nation thinks about the education of its young ones tends to influence the guiding principles and the practice of its educational programmes. This assumption stems from the fact that the Nigerian government has

continued in recent times to emphasize the importance of pre-primary level of education. The government has taken a bold step by including this level of education in its on-going universal basic education program and making it free and compulsory. This is geared towards increasing access. What therefore needs to be looked into is finding out if the existing programs are working towards providing quality pre-school programs to enable the Nigerian education system achieve the objectives for which this level of education aims at. To achieve this, there is therefore need to provide information on nature of teaching, learning and behaviours exhibited by teachers and learners during instruction. Thus, the need to conduct research of this nature. It is therefore believed that using this instrument to generate information on what goes on in preschool classrooms in Nigeria can help in informing the stake holders on the quality of interactions that go on in these settings.

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