

Impact of Decol Thinking Conceptual Training Model on Teachers' wait-Time Management and Pupils' Length of Self Expression in the Classroom, in Jos South Local Government Plateau State. Nigeria

*Chollom Azumi Grace, C.T.O Akinmade
University of Jos (Nigeria)
ngocolom@gmail.com, akinmadec@unijos.edu.ng*

Abstract

The study investigated the impact of Decol Thinking Conceptual Training Model on teachers' questions wait-time in relation to pupils' length of self expression in basic science classrooms, in Jos South Local Government, Plateau State Nigeria. The sample for this study comprises basic primary five pupils randomized between experimental and control groups. A total of 60 randomly selected basic primary five school pupils were exposed to the Decol Thinking Conceptual Training Model (experimental group), while 60 randomly selected pupils were not exposed to the Decol Thinking Conceptual Training Model. A pre-test-post test control group research design was used. Observation through recording of classroom questioning interactions between teachers and their pupils was used as instrument for data collection. In addition, a cool Edith programme was used to measure the length of pupils' self expression in response to basic science teachers' questions. Two research questions were asked and one null hypothesis was tested. Data were analysed using chi-square statistic. The results show that the Decol Thinking Conceptual Training Model produced a significantly positive effect on primary five basic science teachers' questioning behaviours as well as on pupils' length of self expression. It was recommended that both teachers and pupils should be trained using Decol Thinking Conceptual Model to improve wait-time management and increase length of pupils' self expression in primary science classrooms to enhance pupils' thinking skills, promote understanding of basic science concepts and facilitate successful living in the society.

Introduction

The current emphasis on pedagogy in science classrooms is not limited to the learning of the concepts, principles and theories of science but it also includes the development of thinking in which activities involving questioning and feedback are encouraged. Questions are regarded as the driving force in the business of any classroom practice and form the basis for the development of thinking. They convey messages that challenge learners to think and express themselves while providing response to teachers' or each others' questions. The purposes of oral questions in the classroom include but are not limited to stimulating learners to express themselves by providing rational feedback to questions, help teachers to assess pupils' progress and level of understanding of the lesson. Pupils can demonstrate their understanding of the lesson through their correct responses to oral questions and the length of time they take to express themselves in response to the teachers' questions. The length of pupils' response is largely determined by the type of question asked. Low-level questions demand specific whole answers, while high-level questions demand responses that express connection between ideas. Hence, these require a longer length of self expression, in response to the questions. When adequate opportunity for self expression is provided, overt and covert engagements of pupils in classroom task are facilitated. This situation can or may in turn lead to effective and efficient teaching and learning. For teaching to be effective in science, it must be active.

This implies that basic science classroom interactions in Nigerian primary schools are to be done to facilitate communication among teachers and their pupils. To achieve this objective, a skillful management of wait-time principles is important. Important classroom wait-time is categorised as follows: wait-time one which includes asking a question and allowing enough time before assigning pupils to respond (Critelli, & Tritapoe, 2010). This act gives every pupil equal opportunity to think about the kind of responses they give. The second is the post-pupils' response pause time, which is done to allow pupils enough time after they stop responding to questions and before the teacher allows other volunteers to add to the answer or re-answer the question posed to the class. The third important wait-time in the classroom is the pupils' pause-time. This period is allowed so that the pupils can think of what they had just said. Perhaps, they may re-consider adding more points to complete their answers or change the initial answer completely. Effective management of wait-time principles enables pupils to equip themselves with facts and to express their views, conceptions, perceptions and share their ideas clearly in response to the question posed to them by their teachers. Skillful science teachers can help their pupils to express ideas meaningfully by varying the type of questions, by using probing questions and by re-directing questions to expand pupils' thinking and through using Decol Thinking Conceptual Training Model.

Statement of Problem

Research by Chollom (2013) shows that most basic science teachers in Plateau state Nigeria, engage in un-productive management of the wait-time principle. Unproductive teacher behaviours associated with wait-time principles include allowing pupils short wait-time before responding to high-level questions and longer wait-time to respond to a low-level questions as well as allowing no wait-time at all, when teachers answer their own questions. This un-productive management of the wait-time does not give pupils adequate time to express themselves in response to teachers' questions.

Purpose of Study

The purpose of this study is to determine the effects of Decol Thinking Conceptual Training Model on pupils' length of expression when responding to teachers questions in the classroom. Specifically the study was designed to: determine the length of pupils self expression while responding to teachers' questions, determine the frequency of primary five basic science teachers un-productive management of wait-time principles during science classroom interaction and determine the effects of a Decol Thinking Conceptual Training Model on primary five pupils' length of self expression to teachers classroom questions.

Research Questions

The study provided answers to the following questions:

1 What is the average length (in seconds) of primary five pupils responses to their teachers' questions in the classroom?

2 What are the effects of the a Decol Thinking Conceptual Training Model on primary five basic science teachers un-productive management of wait-time and pupils' length of self expression to teachers classroom questions

Hypothesis. There is no significant association between the effects of Decol Thinking Conceptual Training treatment on primary school basic science unproductive wait-time and pupils' length of response to teachers' question.

Methodology

The study employs is a pure experimental design using the pre-test- post-test control randomized group treatments. The experimental and control groups were located at different schools consisting of male and female basic primary five pupils. Pre-test data were collected on all pupils to determine the base line data on their questioning behaviours and to determine the type of training and techniques that were used for the training.

Decol Thinking Model

Decol behaviour modification thinking model creates awareness of teachers about their teaching goals and the role of wait-time in facilitating effective responses. Eight basic primary five teachers and their pupils in government- approved public primary schools in Jos South Local Government Area of Plateau State, Nigeria were the sampled for the study. The schools were randomly selected from the same location to ensure easy transportation to the training centre. Primary five basic science teachers had either Nigeria Certificate in Education or B.Ed with or without Primary Education Studies and are teaching science in primary five in public schools. Three research assistants were trained on how to use digital recorders to record classroom interaction and how to use the Cool Edith programme to measure teachers' wait-time and pupils' length of response to teachers' questions. Teachers were randomised into experimental and control groups to ensure equivalence. The control group comprised of two primary five science teachers and 30 pupils in four classes within the same location (classes G, H.) which were not exposed to Decol Thinking Conceptual Training Model. The experimental group I comprised of two primary five basic science teachers and 30 pupils from classes (B, F) who were both exposed to the training model experimental group II comprised of two primary five basic science teachers and 30 pupils from classes C and D where only the pupils were trained. Experimental group III comprised of two primary five basic science teachers and 30 pupils from classes A and E where only the teachers were trained.

Results

Research Question 1

What is the average length of time of primary pupils responses to their teachers' questions in the classrooms

Table 1- Length of pupils' Response to Primary School basic Science teachers' questions at pre- test classroom interaction.

	Pre-Test					Post-test 1				
	Total Questions Asked	Total questions Answered	percentage of questions Answered	Total time of Response in seconds	Average Length of Pupils' Response(sec)	Total Questions Asked	Total questions Answered	percentage of questions Answered	Total time of Response in seconds	Average Length of Pupils' Response(sec)
	F	F	%			F	F	%		
A	39	14	35.9	15	0.9	0	0	0	0	0
B	229	45	19.7	33	1.4	258	200	77.5	699	3.5
C	103	36	35	20	1.8	90	56	62.2	179	3.2
D	89	36	40.4	39	0.9	90	62	68.9	207	3.3
E	117	56	47.9	48	1.2	42	25	59.5	78	3.1
F	131	57	43.5	42	1.4	129	89	69	325	3.7
G	62	40	64	46	0.9	81	24	29.9	29	1.2
H	117	56	37.9	40	1.4	118	49	41.5	52	1.1
	887	340	38.30%	283	1.2	808	505	62.50%	1569	3.1

The results on table 1 show that the pre-test study revealed that the average pupils' response time to primary school basic teachers during classroom interactions was generally short(1.2 seconds). After the treatment, the average pupils' response time increased to 3.1seconds.

Research question 2: What are the effects of the a Decol Thinking Conceptual Training Model on primary five basic science teachers un-productive management of wait-time and pupils' length of self expression to teachers classroom questions

Table 2 Unproductive Wait-time of Basic Primary Five Science Teachers' Questions and Pupils' Length of self expression at Pre-test and Post- test

Teacher	Pre-test		Total Time of pupils' Response in seconds	Average Length of pupils' Response in Seconds	Post-test		Total of Time pupils' Response in seconds	Average Length of pupils' Response in Seconds
	Un-productive Wait-time				Un-productive Wait-time			
	F	%			F	%		
A	28	71.8	15	0.9	0	0	0	0
B	167	72.9	33	1.4	87	34	699	3.5
C	75	72.8	20	1.8	63	30	179	3.2
D	60	67.4	39	0.9	66	27	207	3.3
E	85	72.6	48	1.2	11	26	78	3.1
F	98	71	42	1.4	48	37	325	3.7
G	46	74.2	46	0.9	54	33	29	1.2
H	87	74.4	40	1.4	96	19	52	1.1
Total	779	72.2	283	1.2	575	74	870	3.1

Result on Table 2 shows an improvement on the management of wait-time principle by teachers in classes B and F. The results also show that the length of expression of pupils increase from 1.4 seconds to 3.5 and 3.7 seconds respectively. Results on Table 2 also show that teacher **A** had no result at post-test. This is because the teacher was transferred and did not complete the training programme. But the unproductive wait-time management of the teacher in the E class shows an improvement and pupils' length of expression also increased from 1.2 seconds to 3.3 seconds. Even though the result of teachers in classes C and D show no improvement in teachers' wait-time management, their pupils' length of self expression increased. This may be attributed to the training the pupils

received. This results show that when either teachers or pupils are exposed to Decol Thinking Conceptual Training Model, pupils' length of self expression to teachers' questions improves.

Hypothesis 2.

There is no significant association between the Decol Thinking Conceptual treatment on wait-time quality of teachers' questions and pupils' length of response to teachers' questions. The data on table 1 were subjected to a chi-square test at 0.5 level of significance and the result shows that the Calculated X^2 is 0.1 and the table value of X^2 is 3.84, with a degree of freedom of 1. Hence, the pre-test result does not showed enough evidence to reject the null hypothesis. When teachers were exposed to the training, the results of post-test were subjected to a chi-square test at 0.5 level of significance. The result shows that the calculated X^2 16.3 which is Greater than Table X^2 3.84 at a degree of freedom of 1 the result showed enough evidence to reject the null hypothesis. The data on table 1 were subjected to chi-square test at 0.5 level of significance to determine the relationship between teachers' wait-time management and pupils' length of self expression to teachers' questions. The results show that the calculated X^2 is 4.5 while the Table value X^2 is 5.991 at a degree of freedom of 2. Hence, the pre-test result does not provide enough evidence to reject the null hypothesis. When teachers and pupils were exposed to the Decol Thinking Conceptual treatment, the result of post-test on Table 2 showed an increase in the average length of pupils' response to teachers' questions from to 1.7 seconds at pre-test to 3.7 seconds at post-test. Similarly, the data on table 2 was subjected to a chi-square test at 0.5 level of significance, the result shows that the calculated X^2 of 77.3 was greater than the Table value which is 5.991. Hence, the post-test result showed enough evidence to reject the null hypothesis

Discussion of Results

Results in table 2 show that the percentage of teachers' unproductive wait-time is 72.2% and the average length of response of primary five pupils to teachers' question at pre-test period was 1.2 seconds. This period is considered too short for a response to a low-level question, more so that there were some few high-level questions asked. The result also suggests that basic primary five pupils' are deficient in providing quality responses to teachers' questions and therefore, both teachers and pupils need to be trained to improve wait-time and length of response respectively. The result of post-test 1 shows a decrease in the wait-time of teachers and pupils' length of response of primary school pupils to teachers' questions from 1.2 to 3.1 seconds. This result supports the views of the behaviourist that through training, human behaviours can be improved, and that training to improve teachers' wait-time management and pupil' is not only important but it is possible.

Recommendation.

Based on the finding of this study, both teachers and pupils should be trained using Decol Thinking Conceptual Model to improve wait-time management and increase length of pupils' self expression in primary science classrooms respectively.

Reference

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- [2] Critelli, A. &. Tritapoe, (2010). Effective questioning techniques to increase class participation. e-Journal of Student Research. 2 (1) pp-1-7