



Original Research Article

A comparative study between cognitive and behavioral approaches toward students academic performance in region no.5 in postcolonial Guyana

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^{1,2}Lidon Lashley

¹Department of Foundation and Education Management, Faculty of Education and Humanities, University of Guyana.

²Commonwealth Scholar 2017/Research Student - University of Roehampton, UK

Author's Email:
lidon_lashley@yahoo.com

Tel: + (592) 6091891 /
+ 44 7496187260

This study was undertaken to analyze the effectiveness of the cognitive and behaviourist approach to behaviour management in Guyana's mainstream elementary schools from an educationist perspective. It analyzed how the Challenging Behaviours can disrupt the learning of the individual learner exerting the behaviour and other learners in the same classroom. In addition, this study attempted to provide an adaptable approach/model for teachers and learners to deal with Challenging Behaviours. The Quasi Experimental, Non Equivalent Control Group design was employed for this study. The instruments which were used for data collection were a teacher made test, observational checklist and a model of cognitive approach to behaviour management. The reliability coefficient of the instrument was 0.846, significance at alpha 0.01. The data were analyzed using descriptive and inferential statistics (t-test, and ANOVA). The findings of the study indicated that: There was a significant difference between the academic performance and occurrences of Challenging Behaviours of learners who were guided using the cognitive approach and those who were guided using the behaviourist approach. In addition, the introduced cognitive approach to behaviour management was very effective in minimizing the occurrences of Challenging Behaviours. It was concluded from the findings that mainstream teachers should use more cognitive approach to behaviour management in their classroom. These approaches improve behaviour management independently in learners.

Key words: Behaviour management, challenging behaviour, cognitive approach to behaviour management, behaviourist approach to behaviour management, class deliberation

INTRODUCTION

I had been a senior mainstream teacher for over a decade in postcolonial Guyana. I observed mainstream teachers using mainly behaviourist approach to behaviour management in their classrooms. I realized that this approach limits learners' independency in managing their own behaviours. It also demanded more time and effort from the mainstream teacher to resolve simple issues the learners could address amicably on their own. I wanted to formulate a cognitive approach to behaviour management and tried it

with my mainstream year six class and found it to be very effective. Hence this study was conducted to further explore the formulated a cognitive approach to behaviour management

Statement of the Problem

Emerson et al. (2001) stated that managing Challenging Behaviours in mainstream elementary schools has always

been a major issue for teachers, educators, administrators, parents and other stakeholders in education. When learners display/exert Challenging Behaviours in the classroom, it disrupts not only their learning but the learning of others. This affects academic performances. The frustration experienced from the loss of teaching and learning time, opportunities and experiences affect the teachers as well as the learners. More recently, the prevalence of Challenging Behaviours has increased in Guyana's mainstream elementary schools. With Corporal Punishment being illegal and teachers relying solely on Behaviourism approaches to manage Challenging Behaviours, the issue has escalated (Sam 2015; UNICEF 2016).

Purpose of the Study

This study was designed to ascertain if:

1. There was a significant difference between the academic performance of learners who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management.

2. There was any significant difference between the academic performance of male and female pupils who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management.

3. There was any difference between occurrences of Challenging Behaviours and class disruptions for learners who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management.

4. There was a significant difference between occurrences of Challenging Behaviours and class disruptions for male and female learners who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management.

5. There was a significant difference between occurrences of Challenging Behaviours and class disruptions for learners of lower and middle socioeconomic status who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management.

6. The introduction of a cognitive approach to behaviour management was more effective in minimizing the occurrences of Challenging Behaviours than behaviourism approaches.

Literature Review

Several researches relating to behaviour management indicate that learners must be involved in the process of managing their own behaviours. The literature available indicated that challenging behaviours are more effectively managed at the classroom level through established behaviour guidelines and dialogue rather than strict rules

and sanctions. The theoretical framework of this study is based on Cummings et al. (1988), Didden et al. (1997), Nikulina and Khomenko (2015) and Vaaland (2017), elucidation on the construct Challenging Behaviours. Challenging Behaviours are attributed to behaviours of such intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or behaviour which is likely to seriously limit or delay access to and use of ordinary community facilities. Challenging Behaviours have a root cause, a trigger, or in some cases multiple triggers and a response. This triangular relationship is continuous and in most learners with Challenging Behaviours; this is their system of functioning. Each part of this triangular relationship works to complete the whole; which is the individual learner. There is a predictable pattern among the three factors that plays an interconnected role in causing a learner to be classified as having Challenging Behaviours. In addition, there are also precursors (a sign or indication before the Challenging Behaviours occur) to Challenging Behaviours. These precursors once observed or spotted give advanced indications of the onset of Challenging Behaviours (Cummings et al., 1988; Didden et al., 1997; Nikulina and Khomenko, 2015 and Vaaland, 2017).

Figure 1 Shows the interconnected and continuous intricate relationship of the factors which cause a learner to exert Challenging Behaviour(s).

Educators/teachers must understand the relationship among the three interconnected main factors and any other mediating indicators relating to the Challenging Behaviours (Cummings et al., 1988; Didden et al., 1997; Nikulina and Khomenko, 2015 and Vaaland, 2017). The root causes of Challenging Behaviours in learners can be social, emotional, a challenge that creates an additional educational need and a failure to connect with learning material. Causes of Challenging Behaviours that are social in nature can cut across two layers. Firstly, the failure or inability to interact with peers and build relationships in the classroom, and secondly, the child's perceived inability to connect with or please the teacher resulting in him/her being confused and/or frustrated. The emotional causes are linked to the child and their home relationship. Understanding the background of the learner will reduce the emotional causes and provide teachers with the opportunity to avoid these causes in the classroom Cummings et al., 1988; Didden et al., 1997; Nikulina and Khomenko, 2015 and Vaaland, 2017).

The triggers are anything in and around the classroom environment that can bring on the Challenging Behaviours. These may include: negative talks, highlighting learners' weaknesses and providing learning activities and experiences the learners cannot relate to or conquer, which will lead to frustration. Triggers may also come from other learners and even other materials presented in the learning sessions (Mcleod, 2006; Goss et al., 2017).

The responses are the Challenging Behaviours the learner will exert as a result of tripping off one or multiple triggers. Responses may include: screaming, pushing, hits, tantrums,

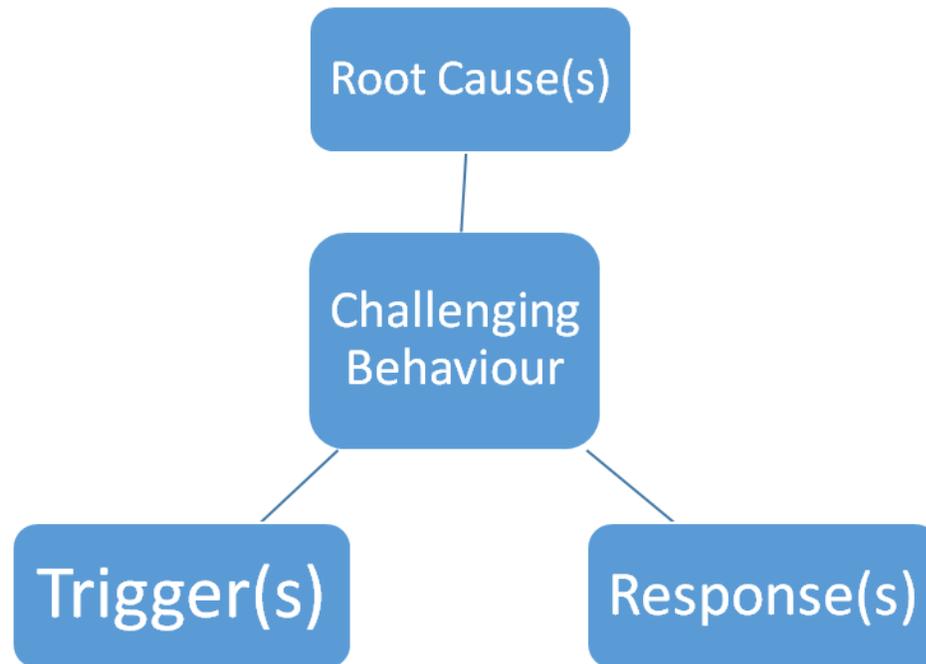


Figure 1: Challenging Behaviour(s).

biting, cursing, destruction of property, selective muteness, head banging and any other forms of aggressive, disruptive, injurious or destructive behaviours.

Educators and teachers need to understand that revolving among the three main factors are the precursors and antecedents which happened just before the Challenging Behaviours. These are forewarnings and signs that can help teachers to neutralize a trigger or multiple triggers. These precursors and antecedents are sometimes very subtle and teachers need to be very observant (Head, 2005, 2007; Rogers, 2011 and Rogers and McPherson, 2014 and Rogers, 2017). Consistency is the key in managing Challenging Behaviours. Teachers need to be consistent with positive praises and rewards, consequences for disruptive attitudes and fairness in dealing with all situations in the classroom. Teachers are not always fair and consistent as expected. Teachers allow their biases to step into their classrooms. Teachers' biases can contribute also to learners exerting Challenging Behaviours (Head, 2005, 2007; Rogers, 2011 and Rogers and McPherson, 2014 and Rogers, 2017).

It is wrong to consider power as something that the institutions possess and use oppressively against individuals and groups, so he tries to move the analysis one step beyond viewing power as the plain oppression of the powerless by the powerful, aiming to examine how it operates in day to day interactions between people and institutions (Foucault, 1979). This wielding of power is common in today's schools. The struggle among school governors and PTAs trying to control what happens in the

classroom by exerting powers given to them in turn limits teacher's power in the classroom. The use of power oppressively in the classroom and school is evident to practising teachers and educators. When learners also feel that teachers or the institution is oppressing their individuality; they will exert Challenging Behaviours. On the other side of this coin is the theory which states that once this power is used to make learners feel empowered and improve their daily interactions with peers and teachers; it will reduce the occurrence of Challenging Behaviours.

Designed and implemented approach

In order for any approach in dealing with 'Challenging Behaviours' to be effective; it must be arbitrarily and collaboratively designed by teachers and learners; learners must fully understand the approach and willingly commit to it (see McPhee and Craig, 2009 and Vaaland, 2017). However, Sometimes the approach might need to be used whether learners accept it or not in order to effectively manage challenging behaviours. The 'Cognitive Approach' guides learners in judging and reasoning effectively. It also empowers the learners and allows them to develop perception and be more aware of their social and physical environment (Ravet, 2007 and Vaaland, 2017). By being empowered the learners will feel that they are in control of their actions. The learners will know that their judgment will be trusted. Through this, the learners will be aware that the manner in which they behave is their own

Table 1. Non-Equivalent Control Group Design

Groups	Pre-Test	Treatment	Post Test
Experimental Group	O ₁	X ₁	O ₂
Control Group	O ₃	X ₂	O ₄

KeyO₁ Pretest results of Experimental Group.O₂ Post test results of Experimental Group.O₃ Pretest results of Control Group.O₄ Post test results of Control Group.X₁ – Designed Cognitive Approach to behaviour management treatment applied to the Experimental Group.X₂ – Behaviourist Approach to behaviour management treatment applied to the Control Group

responsibility. However, the teacher is there to support and guide when it is necessary. Once learners have their input in classroom activities, approaches, and behaviour management, it will create equilibrium in the class. This will create a positive teaching and learning environment for all (Bru, 2006; Nikulina and Khomenko, 2015).

Class Deliberation

The class deliberation took place in the year six class that I was responsible for. This location was chosen to allow learners to speak freely from their learning environment. Through the deliberation process all shared expectations, the head teacher of the school, the Special Educational Needs Co-ordinator (SENCO) and a few parents were all part of the deliberation process. Through classroom deliberation learners have a space to share their opinions and have their views valued and respected (Latimer and Hempsom, 2012 and Rogers, 2017). Key to note is that the school rules were maintained. From the deliberation process, it was decided that the following steps were followed:

1. Agreement on the objective (s) of the approach
2. Create the approach
3. Pilot it for a week
4. Make suggestions for change
5. Implement changes
6. Adopt model as the class behaviour management approach.

This study followed all those guidelines and propositions as it analyzed the effectiveness of the cognitive approach in comparison to the behaviourist approach in managing Challenging Behaviours in mainstream classrooms.

METHODOLOGY

This section explains the approaches utilized to effectively conduct this study. It explains the research design, sample and data analysis. Further potential threats to validity were discussed and the instruments used to gather data.

Research Design

Quasi Experimental design can meet all the requirements of

the true experimental design except randomization (Gay, 2000). Randomization of sample for an experimental study is not practicable in a school system. The design for this study was Quasi Experimental, Non-Equivalent Control Group Design. The Quasi Experimental design was used because unlike the true experimental design, it does not require randomization of sample. However, it still reaches all the other requirements needed in an experiment. With this design, a cause and effect relationship can be hypothesized, which stipulates that condition X will give rise to condition Y (Gay, 2000). The researcher used four intact classes in two schools; one school as the control group and the other as the experimental group. The experimental school (group) and the control school (group) were determined through balloting. Both groups were pretested simultaneously, before the administering of the treatment. At the end of the treatment, a post test was administered simultaneously to both groups (Table 1).

Threats to internal validity

Extraneous variables can affect the results of a Quasi Experimental study and nullify the outcomes. The extraneous variables controlled in this study were:

(a) History

The use of the control group in this study controlled for history (Schneider et al., 2007 and Chong-ho, 2017). Both the control and experimental groups were exposed to the same teaching, learning and behaviour management conditions prior to this study because they used the schools established behaviour management approach. Besides, learners in the four groups were of the same general characteristics and developmental level. Therefore, the presence of the control group removed doubts of biases as both groups could be exposed to the same events outside the prescribed experimental treatment (Gay, 2000 and Chong-ho, 2017).

(b) Maturation

The length of the study can cause maturation effects on the population (Shadish, et al., 2002 and Chong-ho, 2017). The study was conducted for thirteen weeks. This short

duration controlled for maturation.

(c) Instrumentation

Gay (2000) posited that instrumentation threats occur when two different instruments are used for pretesting and post-testing. The same test items were used for the pretest and post test that were administered to both groups. Consequently, this controlled for instrumentation threats (Shadish et al., 2002 and Chong-ho, 2017).

(d) Testing

Both control and experimental groups were exposed to the same pretest. This removed doubts of preferences or biases towards the participants of any of the two groups. Administering the same pretest to the control group and the experimental group controlled for testing in case there was sensitization as a result of the exposure to the pretest before the post test (Schneider et al., 2007 and Chong-ho, 2017).

(e) Hawthorne Effect

No experimental settings were simulated or created in the mainstream classrooms for both the control and experimental group. This controlled for the Hawthorne Effect (Shadish et al., 2002; Schneider et al., 2007 and Chong-ho, 2017). Participants were taught by their regular mainstream teachers who were guided and observed by the researcher.

(f) Treatment Diffusion

Treatment Diffusion could have been a possible threat to the outcome of this study. Because of this, the researcher did not allow the pupils of the control groups nor experimental groups to be aware of the two different treatments being administered. This eliminated the possibility of overlapping and participants having knowledge of each other's treatment. Having knowledge of each other's treatment often leads to groups borrowing aspects from each other so that the study no longer has two distinctly different treatments (Shadish et al., 2002; Schneider et al., 2007 and Chong-ho, 2017).

(g) Differential selection of participants

Initial group differences of intact classes, as those proposed to be used in this study, can account for post test differences (Gay, 2000 and Chong-ho, 2017). The study at its initial stage determined the equivalence between the two groups. The groups were found to be equivalent in academic performance, gender distribution, socioeconomic status and ethnic composition. This was done before the administration of the treatments and post test.

Population

The population for this study was the current Grade Six

learners of the ten primary schools on the West Coast of Berbice, Mahaica Berbice, Guyana. This research targeted pupils of the mainstream Grade Four classes. Pupils of that Grade ranged in age from 10.4 years to 12.3 years.

The population was multicultural consisting of Amerindian, Indians, Africans and mixed race that lived predominantly on the coastline on the West Coast, Berbice. The lot consisted of approximately two hundred ninety (290) boys and three hundred thirty-five (335) girls. The pupils came from lower and middle socio economic status families.

Sample

The sample for this study was the current Grade Six pupils of two similar primary schools on the West Coast of Berbice. This was in Region #5. The two schools were identified through purposive sampling. There were four intact grade four classes in the two Primary schools. The ballot method was used to determine the experimental and control groups. School X was the Control Group. It comprised fifty-two (52) pupils. There were twenty-seven (27) males and twenty-five (25) females. School Y was the Experimental Group. It comprised fifty-three (53) pupils. There were twenty-five (25) males and twenty-eight (28) females. This sample represented approximately 17 percent of the population. The experimental group and the control group were made up of two intact classes each.

Instrumentation

The research instruments that were used to collect data for this study were a teacher made test and observation chart. The teacher made test was used for both pre test and post test. The teacher made test comprised forty (40) objective items. The objective items were multiple choice items from the topics on the term's scheme of work. This type of question was used since there is no subjectivity in scoring. The same test items were used for both pretest and post test. (See appendices for the instruments samples.)

Description of Treatment

Experimental Group: Cognitive Behaviour Management Approach Designed and Used in Study

Objective of Approach

To promote independence, critical thinking and behaviour self-management of all learners of Year Six

Five C's Opt in or Opt out Approach to Behaviour Management

This approach to behaviour management has mechanisms in place to guide the thinking and behaviour of both the teacher and learners in the classroom. It also provides support for any teacher, even a supply/substitute and new

learners. It is based on the principles of the Cognitive Approach.

The five C's mean:

1. Consider your feelings and the feelings of others.
2. Communicate your feelings.
3. Choose a positive alternative.
4. Commit to the choice.
5. Challenge the cause of the 'Challenging Behaviour'.

The five C's are listed in chronological steps and they outline the steps learners will follow independently to control or manage their behaviour in the classroom and generally.

Consider your feelings and the feelings of others

This is the stage when the learner is confronted with the triggers of the 'Challenging Behaviour'. This stage gives learner the opportunity to think critically about how he/she is feeling and what he/she wants to do. The stage allows the learner also the opportunities to self-manage and consider how his/her actions will affect others in the social environment of the classroom. If the learner has self-managed well independently, he/she returns to normal classroom learning activities. If the learner is overwhelmed or faces challenges he/she moves to the next stage.

Communicate your feeling

This stage is when the learner tries to communicate to teacher/teaching assistant what he/she is confronted with and seek guidance. Most importantly to note at this stage is the adult who is to act solely as a guide and allow the decision to be made by the child. The problem can be resolved at this stage. However, other challenges can still arise and the activity occurring at the time of the report may be unsuitable to the learner.

Choose a positive alternative

The learner is allowed to choose an alternative activity/learning experience at various 'Teaching Stations' with multiple 'Work Choices' in the classroom. Florian (2007) posited that giving learners 'Work Choices' enable them to learn inclusively when they are faced with challenges in the classroom. The 'Work Choices' were based on the learning themes of the subjects for the week and be various activities catering to the interests, culture and background of each learner. Scruggs, Mastropieri and McDuffie (2007) concluded that Station Teaching provides learners with an independent alternative space to work on classroom activities when the general learning space presents challenges to their learning and behaviour. Ainscow (2010) posited that 'Inclusive Pedagogy' helps to reduce 'Challenging Behaviours'. As a result, all activities will be very inclusive, promote Inclusion and thus contribute to reducing triggers to 'Challenging Behaviours'

Commit to the choice

This is the stage that supports the preceding stage. This is where once the learner has made a choice on how to manage his/her behaviour independently; he/she has to demonstrate that he/she is committed to the selected alternative task and behaviour management technique.

Challenge the cause of the 'Challenging Behaviour'

The final stage is more of a reflective point. The learners were allowed to discuss with the teacher what triggered the behaviour and how the learner felt he/she handled it. At this point, the teacher and the learners will gain an understanding of the issue to put mechanisms in place to minimize the chance of a recurrence. This also better equip the learners with skills to better handle similar behaviour triggers by challenging the cause of the 'Challenging Behaviour'

Notes and Exceptions

Learners can 'Opt Out' independently at any point of the day once they are confronted with a challenge that can result in a negative behaviour. At any point, when the learner has independently dealt with the 'Challenging Behaviour' he/she can 'Opt In' back independently. If the 'Challenging Behaviour' was not independently resolved and it resulted in a lesson disruption, then the 'Opt Out' choice will not be a free will but a means of discipline because the learner will be taken out of the classroom to the school behaviour centre. When learners have 'Opt Out' he ticks his name under the chart below 'Opt Out' and states the time and reason. When he or she 'Opt In' or return, the same is completed on the chart below 'Opt In.' Key to remember at every C is an 'Opt Out' and 'Opt In' point.

Limitation to Opting Out

Since the aim of the process is to help learners deal with problems independently and objectively, they are only allowed Two 'Opt Outs' per day. The 'Opt Out' must not exceed one learning session. At the end of the session you 'Opt Out' you must return and try again in the new session(Figure 2).

Like the approach itself, the reward system was collaboratively designed by the learners and the researcher. It was ensured that learners were not rewarded for a performance/exhibition of an expected behaviour but for demonstrating critical thinking, good self-regulation and self-management of 'Challenging Behaviours'. Rewards were presented at the end of the week at the class assembly(Table 2).

House points can be allowed to accumulate and collected at half term or exchanged at any time for an independent activity of choice e.g. library time, ICT time, Game time, Extra Playtime, Movie time or any activity of the learners' choice once pre-agreed upon collectively by the class and

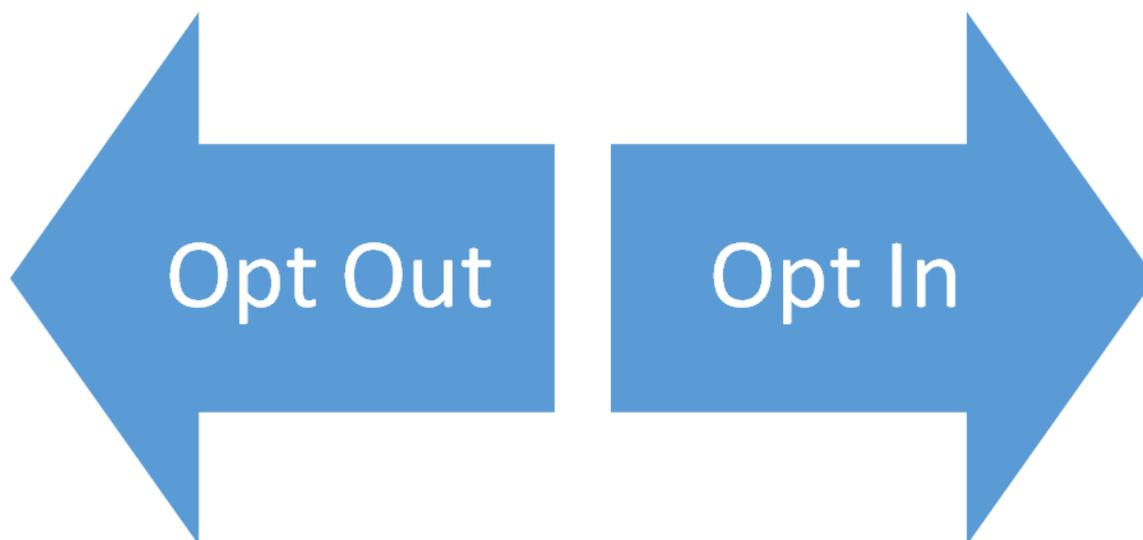


Figure 2: Shows the Opt In / Opt Out Alternative that I designed and implemented with my current Year Six Class

Table 2. The Reward System of the Five C's 'Opt In' and 'Opt Out' Cognitive Approach to Behaviour Management

Behaviour Management	Reward
Excellent behaviour management and Zero 'Opt Out'	15 House Points
Excellent behaviour management and timely 'Opt In' after choosing to 'Opt Out'	15 House Points
Good behaviour management and three and below 'Opt Outs'	10 House Points
Good behaviour management and timely 'Opt In' after choosing to 'Opt Out' less than three times	10 House Points
Satisfactory behaviour management and timely 'Opt In' after choosing to 'Opt Out' less than the permitted allocation.	5 House Points

teacher.

Teachers were keen on what programmes they agreed on for extra time so as not to disappoint the learners. The moment is more valuable than a material reward.

Note: The behaviorist approach to behaviour management was not explained because that was the approach already utilized in the schools. So they were allowed to continue the behaviourist approach in use for the control groups.

Validation of Instrument

Four specialists in the field of education who are experts in Curriculum, Behaviour Management and Measurement and Evaluation, from two tertiary institutions were employed to examine the content and construct validity of the test items. This was done to ensure that all the items were directly related to the content and no unrelated items were included in the test.

Reliability of Instruments

The instrument was piloted with Grade Six learners who were not part of the sample for the study. A pilot test using the test retest approach was carried out to determine the reliability of the research instrument. A reliability coefficient of 0.846 was obtained using Pearson's product moment correlation coefficient to ensure the instrument provided reliable data for the study. The correlation was significant at the 0.01 level and falls within the acceptable range for the size of the sample and the length of the study (Table 3).

Procedure for Data Collection

To commence this study, the first step involved soliciting permission from the Regional Education Officer, Region # 5, and the head teachers of the two schools that were used for the study. Four teachers of Grade Four were asked to assist with the administration of the treatment.

Table 3. Reliability coefficient of instrument using the Pearson Product Moment correlation coefficient

Descriptive Statistics

Groups	Mean	Std. Deviation	N
Experimental Group	8.4800	2.10956	25
Control Group	8.4400	2.66506	25

Correlations

		Pilot A	Pilot B
Pilot A	Pearson Correlation	1	.846**
	Sig. (2-tailed)		.004
	N	25	25
Pilot B	Pearson Correlation	.846**	1
	Sig. (2-tailed)	.004	
	N	25	25

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4(a). Mean scores for Control group and Experimental group

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error
Pair 1	Pretest Control Group	2.2308	52	2.79787	.38799
	Pretest Experimental Group	2.4038	52	3.47687	.48215

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pretest Control Group & Pretest Experimental Group	52	-.046	.767

After the preliminaries, the pretest was simultaneously administered to the experimental and control group. After the pupils had completed the pretest, the scripts were immediately marked and data aggregated by the researcher. The treatments were then administered for a thirteen (13) weeks period. The experimental and control groups were guided to manage their behaviours using Cognitive and Behaviourist approaches to behaviour management. At the culmination of the treatment period, the post test was administered to both groups simultaneously. The completed test scripts were marked immediately and analyzed.

Statistical Technique for Analysis of Data

Descriptive statistics and inferential statistics were used to analyze the data for this study. The descriptive statistics were mean and standard deviation while the inferential statistics were t-test and ANOVA.

The t-test was used to analyze research question One, since it involved the means of two groups. Shadish, Cook

and Campbell (2002) and Schneider, Carnoy, Kilpatrick, Schmidt and Shavelson (2007) noted that t-test can be used to determine if there is any significant difference between the means of two groups.

The simple, or One Way, Analysis of Variance ANOVA was used to analyze data for research questions # 2 and #3. ANOVA was considered an appropriate analysis technique for these two research questions since they involved the means of multiple groups. Gay (2000) Shadish et al. (2002) and Schneider et al. (2007) posited that it is more effective and convenient to perform one-way ANOVA than to perform several t-tests since it is much more efficient and keeps the error rate under control. The research questions were tested for significant difference at 0.05 level of significance.

RESULTS AND DISCUSSION

The analysis, interpretation and discussion of the gathered data are presented in this section. This section shows the knowledge generated by this study.

Table 4(b) T test to determine the significant difference between the pre-test scores of the experimental and control groups

Paired Samples Test		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest Control Group – Pretest Experimental Group	-1.17308	4.55348	.63145	-2.44077	.09462	-1.958	51	*.069

* $p > 0.05$ level of significance

Table 5a Comparison of pretest and post test mean scores of the experimental and control groups.

	No. of Pupils	Mean Pretest	Mean Post-test	Gain
Experimental	53	2.4038	12.2308	8.8270
Control	52	2.2308	4.5962	2.3654

Table 5b. T- test for significant difference between the post test scores of the experimental and control groups.

Paired Samples Test		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Post CG – Post EG	-6.63462	6.16481	.89358	-8.62931	-4.63992	-7.677	51	*.000

* $P < 0.05$

As indicated in Table 4a- 4b, there was no significant difference between the performance of students in the experimental group and those in the control group at the pretest level ($t = -1.958$ $p = .069$; $p < 0.05$).

Tables 5a – 5b: Test for significant difference between the academic performance of pupils in Mathematics who were taught with Computer Aided Instruction and those taught using the traditional method.

Table 5a. shows the post- test scores of pupils in both groups. Those who were guided to manage their behaviour using a cognitive approach (experimental group) had a post- test mean of 12.2308 with a mean gain of 8.827. Those who were guided to manage their behaviour using a behaviourists approach (control group) had a post test mean of 4.5962. They had a mean gain of 2.3654. Thus, both groups showed improvements in their academic performance after treatments. However, the pupils in the experimental group had a greater mean gain. This implies that the pupils in the experimental group performed better than those in the control group.

The result of the study in Table 5b shows that there was a significant difference between the academic performance of the experimental group who was guided to manage their

behaviour using a cognitive approach and those who were guided to manage their behaviour using a behaviourist approach ($t = - 7.677$, $p < 0.05$). The better performance of the experimental group may be attributed to more effective behaviour management of the cognitive approach.

From the researcher's observations and that of the other teachers, the learners who were guided to manage their behaviour using a cognitive approach were active during the lesson. They were excited and showed interest in the lessons. They supported each other better with fewer disruptions. Learners who were guided to manage their behaviour using a behaviourist approach were less active with more disruptions and demanded the teacher's attention more.

In Table 6a, the mean of the pretest and post test scores for male pupils in the experimental group were 3.3929 and 12.4643 respectively with a gain of 8.071. The mean of the pre- test and the post- test for the female pupils in the experimental group were 2.32 and 11.08 respectively with a gain of 8.76. In the control group, the mean of the pre- test and post test for male pupils were 2.5185 and 4.3571 respectively with a gain of 1.8386; the pretest mean and the post test mean for the females were 1.920 and 4.68

Table 6a. Pre- test and post test mean scores of male and female students in the control and experimental groups

	No. of Males	No. of Females	Mean males pre-test	Mean: males post- test	Gain	Mean: females pre- test	Mean: females post- test	Gain
Experimental	28	25	3.3929	12.4643	8.0714	2.32	11.08	8.76
Control	27	25	2.5185	4.3571	1.8386	1.92	4.68	2.76

Table 6b. ANOVA test for the significant difference between male and female students in the control and experimental groups

ANOVA						
	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	1173.640	1	1173.640	49.836	.000	Significant Difference
Within Groups	2449.274	103	23.779			
Total	3622.914	104				

$P < 0.05$

Table 6 (c) Analysis of performance between genders

		Sum of Squares	Df	Mean Square	F	Sig.
Post CG	Between Groups	1.377	1	1.377	.088	.776
	Within Groups	857.869	51	16.821		
	Total	859.245	52			
Post EG	Between Groups	1.950	1	1.950	*.072	.805
	Within Groups	1608.804	51	31.545		
	Total	1610.755	52			

* $p > 0.05$

respectively with a gain of 2.76. The results of this study showed that both the male and female pupils in the experimental and control groups improved in their performance. However, those in the experimental group performed better than their counterparts in the control group after being guided to manage their behaviours using the cognitive approach.

Table 6b shows $F = 49.836$; $p = .000$; $p < 0.05$. Since the p value is less than 0.05, there was a significant difference between the academic performance of female and male learners who were guided to manage their behaviours using the cognitive approach and those who were guided using the behaviourist approach.

A post hoc test revealed that in the experimental group, the male and female pupils performed significantly better than their counterparts in the control group. Since both male and female pupils performed significantly better than their counterparts in the control group, the better performance might be attributed to the effectiveness of the cognitive approach to behaviour management.

In Table 6c for the experimental group, F value = .072, $p = .805$. Since the p value is greater than 0.05, there was no significant difference between the academic performance of female and male learners who were guided to manage

their behaviours using the cognitive approach.

A post hoc test revealed that there was no significant difference between the performance of male and female learners in the experimental group. This implies that gender had no effect on the performance of pupils in the experimental group. The cognitive approach to behaviour management had similar effects on the performance of both male and female learners.

Effects and Outcomes of Implemented Approach

From the weekly observation charts, it was evident from the implementation of the created cognitive approach that learners' behaviour management changed positively in the experimental group. It started with learners exerting an average of fifteen (15) challenging behaviours per week for the first three (3) weeks. Sixty eight percent of the Challenging Behaviours were independently and effectively resolved by the learners. Thirty two percent of the Challenging Behaviours required teachers' intervention. From week four, Challenging Behaviours continued to decrease significantly and a low occurrence was maintained. In addition, 83 percent of the Challenging Behaviours were independently resolved. By the twelfth

Table 7a) Analysis of Occurrences of Challenging Behaviours – Experimental Group

Wk	Total Occurrences of Challenging Behaviours						Amount Independently and Effectively Resolved						Amount Requiring Teacher's Intervention					
	M	%	F	%	Total		M	%	F	%	Totals		M	%	F	%	Totals	
					#	%					#	%					#	%
1	8	53	7	47	15	100	6	55	5	45	11	73	2	50	2	50	4	27
2	8	50	8	50	16	100	5	45	6	55	11	69	3	60	2	40	5	31
3	6	46	7	54	13	100	4	50	4	50	8	62	2	40	3	60	5	38
4	5	56	4	44	9	100	3	50	3	50	6	67	2	67	1	33	3	33
5	4	50	4	50	8	100	4	57	3	43	7	88	0	0	1	100	1	12
6	5	50	5	50	10	100	4	50	4	50	8	80	1	50	1	50	2	20
7	3	60	2	40	5	100	3	60	2	40	5	100	0	0	0	0	0	0
8	2	40	3	60	5	100	2	50	2	50	4	80	0	0	1	100	1	20
9	1	50	1	50	2	100	1	50	1	50	2	100	0	0	0	0	0	0
10	1	50	1	50	2	100	1	50	1	50	2	50	0	0	0	0	0	50
11	1	100	0	0	1	100	1	100	0	0	1	100	0	0	0	0	0	0
12	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	44	51	42	49	86	100	34	52	31	48	65	76	10	48	11	52	21	24

Table 7 (b) Analysis of Occurrences of Challenging Behaviours– Control Group

Wk	Total Occurrences of Challenging Behaviours						Amount Independently and Effectively Resolved						Amount Requiring Teacher's Intervention					
	M	%	F	%	Total		M	%	F	%	Total		M	%	F	%	Total	
					#	%					#	%					#	%
1	13	52	12	48	25	100	8	53	7	47	15	60	5	50	5	50	10	40
2	12	75	12	25	16	100	6	50	6	50	12	75	6	50	6	50	12	25
3	13	50	13	50	26	100	3	23	10	77	13	50	10	77	3	23	13	50
4	9	53	8	47	17	100	4	44	5	56	9	53	5	63	3	37	8	47
5	10	48	11	52	21	100	4	57	3	43	7	33	6	43	8	57	14	67
6	11	44	14	56	25	100	4	50	4	50	8	32	7	58	10	42	12	68
7	12	55	10	45	22	100	6	46	7	54	13	59	6	66	3	34	9	34
8	15	54	13	46	28	100	2	33	4	67	6	21	13	62	9	38	21	38
9	8	47	9	53	17	100	1	50	1	50	2	12	7	47	8	53	15	53
10	9	64	5	36	14	100	1	20	4	80	5	36	8	89	1	11	9	11
11	8	44	10	56	18	100	6	55	5	45	11	61	2	29	5	71	7	71
12	6	55	5	45	11	100	3	50	3	50	6	55	3	60	2	40	5	40
13	7	64	4	36	11	100	5	71	2	29	7	64	2	50	2	50	4	50
TOTAL	133	51	126	49	259	100	53	46	61	54	114	44	82	56	65	44	147	56

week, Challenging Behaviours were no longer occurring. Both male and female learners were independently and effectively resolving Challenging Behaviours (Table 7a).

From the weekly observation charts, it was evident that Challenging Behaviours remained a frequent occurrence. It started with learners exerting an average of twenty-two (22) challenging behaviours per week for the first three (3) weeks. Sixty two percent of the Challenging Behaviours were independently and effectively resolved by the learners. Thirty eight percent of the Challenging Behaviours required teachers' intervention. For both the Experimental and Control Group learners' independent and effective management of Challenging Behaviours were at an average of 65 percent.

From week four, Challenging Behaviours consistently maintained an average occurrence of 23 occurrences per

week. Further, the percentage of Challenging Behaviours decreased from 62 percent to 40 percent. By the twelfth week Challenging Behaviours were reduced by half. However, Challenging Behaviours were still occurring at 14 per week for both male and female learners (Table 7b).

In Table 8 The overall analysis indicated that the group guided to manage their behaviours using a behaviourist approach (Control Group) had three times more occurrences of Challenging Behaviours than the group who was guided to manage their behaviours using a cognitive approach (Experimental Group). Seventy six percent of the Challenging Behaviours in the Experimental Group were independently and effectively resolved by both male and female learners which was 32 percent more than the learners in the Control Group. In the Experimental Group, only 24 percent of the Challenging Behaviours required

Table 8. Comparisons of Occurrences of Challenging Behaviours

Groups	Total Occurrences of Challenging Behaviours	Amount Independently and Effectively Resolved		Amount Requiring Teacher's Intervention		Differences	
		#	%	#	%	Independently and Effectively Resolved	Requiring Teacher's Intervention
Experimental Group	86	65	76	21	24	32% more	32% less
Control Group	259	114	44	147	56	32 % less	32 % more

Table 9. Comparison of Occurrences of Challenging Behaviours by Gender

Groups	Total Occurrences of Challenging Behaviours						Amount Independently and Effectively Resolved						Amount Requiring Teacher's Intervention					
	M		F		Total		M		F		Total		M		F		Total	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Experimental Group	44	51	42	49	86	100	34	52	31	48	65	76	10	48	11	52	21	24
Control Group	133	51	126	49	259	100	53	46	61	54	114	44	82	56	65	44	147	56

teacher's intervention to resolve them which was also 32 percent less than the learners in the Control Group.

In Table 9 it was observed that both the Experimental and Control Groups, male learners exerted 2 percent more of the Challenging Behaviours. This is not enough to constitute a significant difference between the genders. In both Groups, male learners had 51 percent while females had 49 percent. However, the 51 percent of Challenging Behaviours of males in the Experimental group represent 44 Challenging Behaviours and 133 Challenging Behaviours in the Control Group. In the Experimental Group, 52 percent of male learners and 48 percent of female learners independently and effectively resolved their Challenging Behaviours. In the Control group, 46 percent of male learners and 54 percent of female learners independently and effectively resolved their Challenging Behaviours.

The Cognitive Approach to behaviour management used in the experimental group worked well. Charles (2005) posited that behaviour management approaches must allow learners the opportunity to reflect and understand how their behaviour disrupted the teaching and learning interaction and can hinder their learning and the learning of others. This cognitive approach had five chronological stages with opportunities for learners to reflect on their behaviour. This was very effective. First, all learners of the Grade Six class who were in the experimental and control group were not on the same level of cognitive development. This meant that they critically analysed problems differently. Some learners needed assistance in articulating the reason why they needed to 'Opt Out' in writing on the chart. Therefore, support had to be provided to some learners in this area. Second, there was a significant reduction in the amount of 'Challenging Behaviours' problems within the experimental group. It was also evident that learners did not take advantage of the 'Opt Out' to leave learning sessions or avoid subjects they found

challenging.

Bru (2006) posited that if learners are given a chance to understand why they behave in a particular manner and the effects of such behaviours, they are more likely to change the negative behaviour (s). It was seen in the reflective part of the fifth C that many learners developed critical awareness of the amount of control they can independently exert over their own behaviour. They were then guided to transfer this developed self-awareness and critical thinking to other areas of their life and social interactions. It was also seen that learners transferred the behaviour management process to the playground and other areas around the school.

Emerson et al. (2001) stated that learners manage their behaviour better when they have the confidence that teachers trust them to act responsibly and would guide them if they behaved inappropriately rather than criticize or condemn. The Five C's 'Opt In' and 'Opt Out' Cognitive Approach to behaviour management allowed learners to realize the trust and confidence teachers placed in their ability to self-regulate their behaviour and that they are more inclined to help with restorative assistance and not criticisms.

Learners' Reflections

The reflections of two learners from the Experimental Group, (their names were omitted for ethical concerns and for child protection and safeguarding).

Learner 1

Learner 1 is an eleven year old respondent of the Rastafarian Culture. His father is in prison and he lives with his mom and his step-father. He has no siblings and is often on his own. He is brilliant and can handle challenging

mental tasks. However, he is generally unmotivated and has sudden unpredictable outbursts which would disrupt the learning of the entire class. He finds it hard to express himself because he is afraid of being misunderstood or laughed at. This often results in him becoming very angry and frustrated. I tried conventional behaviour management strategies with him but all failed. However, since we developed The Five C's 'Opt In' and 'Opt Out' Cognitive Approach, he began to self-manage his own behaviour excellently.

"I used to feel everybody in Grade Six was making jokes about my father being in prison. This used to frustrate me when ever I know the answer to questions asked but become afraid to speak because I was feeling scared of being mocked. This would also make me miss my Dad and I would have outbursts and cause confusion in the class. This would make me feel sad after. Since, we started using The Five C's 'Opt In' and 'Opt Out' Cognitive Approach, I can Opt Out when I am feeling frustrated and take a moment on my own to calm down or I can sit alone and my teacher will come and we talk things out and I feel better because I know I managed my frustration on my own and that my teacher trusted me to do it on my own. I like this approach, it does not force you to do things a certain way with a set of rules to follow."

Learner 2

Learner 2 is of the upper middle class. She is well exposed and has a lot of experiences. She has a private tutor at home and is chauffeur driven to school. Because of her exposure and background, sometimes some lessons are not interesting for her during literacy because she had probably visited the culture being read about. She is often very disruptive and her peers think she is a show off. However, since we developed The Five C's 'Opt In' and 'Opt Out' Cognitive Approach, she can Opt Out to one of the work stations in class and do a more challenging or parallel activity. This makes her comfortable and less disruptive and it has improved her relationship with her peers.

"I was easily bored in class and became very disruptive unintentionally. I would know I am being disruptive but couldn't care because if I don't completely understand the work at school my tutor at home will guide me or dad will take me for what he calls a direct experience. Since we started using the Five C's 'Opt In' and 'Opt Out' Cognitive Approach with my teacher I am making more responsible decisions. I am enhancing my own learning and assisting my peers with my experiences. If I am extremely bored and think I will become disruptive, I simply Opt Out to one of the work stations and complete the tasks. I feel confident because I am trusted at home to make good choices and it is good that I am now given the same respect at school."

As was indicated by the reviewed literature, learners who were guided to manage their behaviours using the cognitive approach indicated that they felt. They felt *trusted at home*

to make good choices and it is good that they are given the same respect at school. Learners indicated that they like the cognitive approach. They like it because it does not force them to do things a certain way with a set of rules to follow but rather provide guidelines.

Summary of Findings

Learners in the experimental group performed much better than those in the control group at the post test level. The better performance of the experimental group might be due to their exposure to the cognitive approach to behaviour management.

There was a significant difference between the academic performance of male and female learners who were guided using the cognitive approach and those who were guided using the behaviourist approach. Since both male and female learners in the experimental group performed better than their counterparts in the control group, the better performance may be attributed to the cognitive approach to behaviour management. Although the improved performance of both male and female learners in the experimental group was better than their counterparts in the control group, the cognitive approach to behaviour management had similar effects on both genders in the experimental group. This means gender had no effect on behaviour management and performance of the pupils in the Experimental Group.

There was a significant difference between the behaviour management and occurrence of disruptions and/or Challenging Behaviours of lower and middle income pupils who were guided using the cognitive approach, and those who were guided using the behaviourist approach. From this study, the lower and middle income pupils in the experimental group improved in their performance, and reduced occurrences of Challenging Behaviours and class disruptions than their counterparts in the control group. Since both the lower and middle socioeconomic pupils in the experimental group performed better than their counterparts in the control group, the better performance might have been due to the cognitive approach to behaviour management. Furthermore, since there was no significant difference between the performance and behaviour management of the two income groups of students in the experimental group, the cognitive approach to behaviour management had similar effects on both groups. The socioeconomic status of the learners seemed not to have had any influence on the better performance and behaviour management of the experimental group.

Throughout education history and debates, the choice was always between Behaviourism and Cognitivism. However, as teachers we need to be aware that our jobs are not to manipulate learners like primitive animals similar to Skinner's Pigeon in Operant Conditioning or Pavlov's Dog in Classical Conditioning. These are all behaviourist approaches. We need to be aware that our learners are complex, cognitive, and affective beings. The Five C's 'Opt In' and 'Opt Out' Cognitive Approach to behaviour

management is a very reliable approach to help our learners manage their own behaviours independently while developing self-awareness.

Conclusion

There was a significant difference between the academic performance of learners who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management. There was a significant difference between the academic performance of male and female pupils who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management. There was a difference between occurrences of challenging behaviours and class disruptions for learners who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management. There was a significant difference between occurrences of challenging behaviours and class disruptions for male and female learners who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management. There was a significant difference between occurrences of challenging behaviours and class disruptions for learners of lower and middle socioeconomic status who were guided to manage their behaviours using a cognitive approach and those guided using the behaviourist approach at behaviour management. The introduction of a cognitive approach to behaviour management was more effective in minimizing the occurrences of challenging behaviours than behaviourist approaches.

Recommendations

Teachers

Teachers must guide learners to develop critical thinking skills to manage the triggers of 'Challenging Behaviours' and develop self-awareness. Teachers should allow learners to develop independence in behaviour management through critical thinking and situation analysis rather than responding how they were conditioned to respond. This will enable teachers to effectively manage behaviour issues in the classroom and reduce the challenge on teachers as well as reduce disruption of the learning of others.

Teachers need to be aware that learners come to their classrooms with varying abilities and learning styles and some with Special Education Needs. Therefore, they should embrace an approach to behaviour management that prepares learners to deal with future crises.

A rational objective human being is less likely to be involved in a violent outburst that will endanger the life of himself/herself or others. This Cognitive Approach to behaviour management helps learners become rational and objective in their problem solving skills and teachers

should aim to do this.

Mainstream classroom teachers need to be innovative with the behaviour management approaches used in the classroom.

Ministry of Education

There is need for more continuous professional development sessions (CPD) and training in the education system for teachers which would enable them to acquire relevant knowledge and skills for the successful use of cognitive approaches to behaviour management. The Ministry of Education needs to provide support and resources for elementary teachers at all levels to improve their competencies in behaviour management using a cognitive approach.

School Administrators

School Administrators should collaborate with the class teachers, parents, community and other stakeholders to assist teachers and guide learners to manage their behaviour using the cognitive approach rather than conditioning of behaviourism.

Ethical Considerations

The British Educational Research Association (2011), under the Ethical Guidelines for Educational Research, Second Revision, stated that before the commencement of any study/ primary research, you need to get the consent/permission from the target sample of the population. The participants in this study were children and the consent of their parents and the relevant education authorities were sought. If after a participant had consented and he/she wished to withdraw their responses and opt out of the study, this would have been facilitated and their pre-test and post-test scores would have been removed from the data analysis. The researcher followed all ethical principles guiding the conducting of an experiment. Conclusions deduced during the analysis and interpretation of the data objectively were shared with all participants.

Limitations

This study analyzed two behaviour management approaches over a thirteen weeks period, using only a sample of schools and learners at the elementary level. Therefore, the results may not represent the effectiveness of the cognitive approach to behaviour management at the other levels of mainstream education.

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APPENDICES**Appendix 1: Pretest/Post test Instrument****Pretest/Post test****MATHEMATICS TEST (1hour)**

Name: _____ Grade 6 _____

This test contains FORTY (40) items; you are required to complete all items.

Study the number below then answer questions 1 – 4

1 004 431

- What is the face value of fourth number?
(a) 4000 (b) 400 (c) 40 (d) 4
- The digit value of the third number is _____
(a) 4000 (b) 400 (c) 40 (d) 0
- What is the place value of the third number?
(a) thousands (b) hundreds (c) tens of thousands (d) millions
- What is the difference in digit value of the first four and last four?
(a) 3600 (b) 360 (c) 36 (d) 0
- Which two numbers have a LCM of 6?
(a) 2 and 3 (b) 3 and 6 (c) 6 and 9 (d) 6 and 12
- 9 is the third multiple of which number?
(a) 3 (b) 9 (c) 9 (d) 12
- Which set of numbers has all the factors of 6?
(a) (1,2,3,6) (b) (3,6) (c) (3,6,9,12) (d) (6,16,18,24...)
- The HCF of 6 and 18 is _____
(a) 9 (b) 6 (c) 3 (d) 1

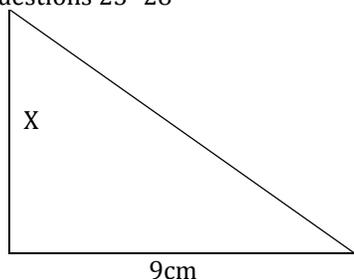
Study the sequence below then answer questions 9 and 10

12, 25, 39, __, __

- The next two numbers in the sequence are __
(a) 54 and 70 (b) 53 and 67 (c) 54 and 69 (d) 53 and 70
- What type of sequence is it?
(a) addition (b) subtraction (c) multiplication (d) division
- What is the difference between one hundred, ten and ninety six?
(a) 14 (b) 206 (c) 300 (d) 314
- The product of 102 and 23 is _____
(a) 2346 (b) 125 (c) 79 (d) 4
- How many \$20 are there in \$1060?
(a) 20 (b) 25 (c) 35 (d) 53
- $0.5 + 1.5 + 5 =$ _____
(a) 7 (b) 6.5 (c) 5.5 (d) 2.5
- 0.5 multiplied by 5 is _____
(a) 0.25 (b) 2.5 (c) 25 (d) 50
- 3.76 divided by 0.2 = _____
(a) 1.88 (b) 18.8 (c) 28.8 (d) 38.8
- 0.5 is equivalent to which fraction?
(a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{1}{3}$ (d) $\frac{1}{5}$
- In the number 1.345 the place value of the 4 is _____
(a) tens (b) tenths (c) hundreds (d) hundredths
- What is the average of 12, 24 and 18 is _____
(a) 12 (b) 18 (c) 24 (d) 36
- The average of three numbers is 6, two of the numbers are 6 and 3, what is third number?
(a) 9 (b) 6 (c) 4 (d) 3
- $\frac{1}{2} + \frac{1}{4} =$ _____
(a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{3}{4}$ (d) $\frac{2}{3}$

22. $\frac{3}{4}$ is equivalent to which decimal?
 (a) 0.25 (b) 0.50 (c) 0.75 (d) 0.34
23. What is $\frac{5}{6}$ of \$120?
 (a) 30 (b) 60 (c) 90 (d) 100
24. Calculate the value of $\frac{3}{4}$ divided by $\frac{1}{6}$.
 (a) $\frac{1}{8}$ (b) $\frac{1}{4}$ (c) $\frac{3}{4}$ (d) $\frac{2}{3}$

Study the shape below then answer questions 25- 28



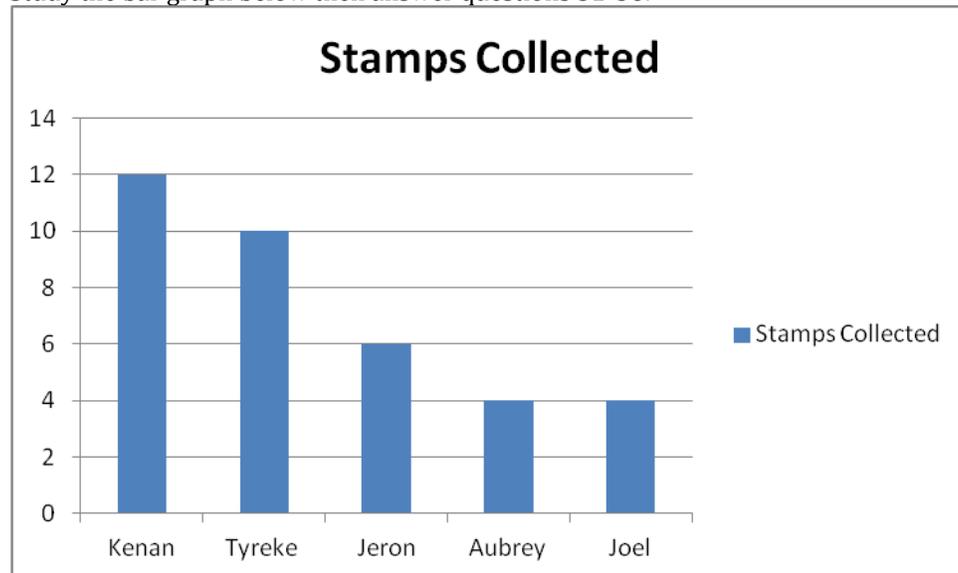
25. The perimeter of the triangle is _____
 (a) 27 cm (b) 81 cm (c) 729 cm (d) 1000 cm
26. What type of triangle is illustrated in the diagram?
 (a) Equilateral (b) Isosceles (c) Scalene (d) Obtuse Angled
27. Calculate the value of angle x
 (a) 45 degrees (b) 60 degrees (c) 90 degrees (d) 180 degrees
28. What type of angle is angle x?
 (a) Right Angle (b) Straight Angle (c) Acute Angle (d) Obtuse Angle

Study the statement below then answer question 29 and 30

Share \$260 between Kenan and Shammar so that Shammar receives \$20 less than Kenan.

29. How much money will Shammar receive?
 (a) \$ 120 (b) \$140 (c) \$110 (d) 20
30. Kenan will receive _____
 (a) \$ 120 (b) \$140 (c) \$110 (d) 20

Study the bar graph below then answer questions 31-36.



31. Calculate the total amount of stamps collected.
 (a) 36 (b) 12 (c) 10 (d) 4
32. What fraction of the total stamps collected was collected by Kenan?
 (a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{3}{4}$ (d) $\frac{3}{5}$
33. Convert the fraction of stamps Kenan collected to a decimal.

- (a) 0.5 (b) 0.75 (c) 0.33 (d) 0.567
 34. What fraction more of stamps Kenan collected than Jeron?
 (a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$
 35. The two boys who collected $\frac{1}{9}$ of the stamps each are _____
 (a) Kenan and Tyreke (b) Tyreke and Jeron (c) Jeron and Aubrey (d) Aubrey and Joel
 36. The boy who collected the third highest amount of stamps collected what decimal of the stamps?
 (a) 0.166 (b) 0.05 (c) 0.25 (d) 0.3
 37. How many 45 minutes periods are there in two and a half hours?
 (a) 2 (b) 3 (c) 4 (d) 6
 38. 1 century is equivalent to how many scores?
 (a) 10 (b) 5 (c) 2 (d) 1
 39. $2\text{h } 45\text{mins} + 3\text{ h } 54\text{mins} =$ _____
 (a) 6h 39mins (b) 5h 99mins (c) 3h 39mins (d) 7 h
 40. If Mahendra leaves home at 08:10h and walks 25mins to get to school, what time did he arrive at school?
 (a) 08:35h (b) 09:25h (c) 08: 15h (d) 07:45h

ANSWER KEY

1. D
 2. D
 3. C
 4. A
 5. A
 6. A
 7. A
 8. B
 9. A
 10. A
 11. A
 12. A
 13. D
 14. A
 15. B
 16. B
 17. A
 18. D
 19. B
 20. A
 21. C
 22. C
 23. D
 24. A
 25. A
 26. A
 27. C
 28. A
 29. A
 30. B
 31. A
 32. B
 33. C
 34. A
 35. D
 36. A
 37. B
 38. B
 39. A
 40. A

Appendix 2: Observation Chart

An analysis of Challenging Behaviours in mainstream schools

Observation Chart

Class: _____ Date: _____

No. of learners present

Males: _____ Females: _____ Total: _____

No.	Name of Learner	Challenging Behaviour Exerted		Independently and Effectively Resolved		Teacher's Intervention		Learners' Feedback	Teacher's Comment
		Yes	No			Yes	No		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
Total									

Analysis

Total Occurrences of Challenging Behaviours			Amount Independently and Effectively Resolved			Amount Requiring Teacher's Intervention		
Male	Females	Total	Males	Females	Totals	Males	Females	Totals

Signature of Observer: _____ Date: _____