Performance Lag Address Programme (PLAP): Teachers' perceptions and pedagogical approaches in Mutare urban P2 (former group B) Primary Schools.

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Abstract

The purpose of this study is to determine if teachers' perceptions on Performance Lag Address Programme (PLAP) match their classroom practice in P2 (Former group B) primary schools in Mutare urban primary schools in Zimbabwe. A quasi-experimental design was used in the study. Two schools were randomly selected from a total of 14, P2 primary schools. One school was found to be streaming while the other was not. Six teachers (three from each school) were interviewed to gather their perceptions on PLAP and teaching methods within their classes. Three classes from each school were purposely selected. A total sample size of 195 (Boys = 91; Girls = 104) participated in the study. School X (mixed ability) has a total of 88 pupils (boys=37; Girls=51) while school Y has a total 107 participants (Boys=54; Girls=53). A Wide Range Achievement Test- Revised Mathematics subtest was used to determine pupils' achievement levels. Teachers' views on PLAP varied depending on the class they were teaching in a mixed ability school, but matched their teaching methods. In a mixed ability school X, the grade 5A teacher felt challenged but having positive views of PLAP performed the best (2 grades above grade placement) while class B achieved a grade below grade 5 and the teacher views PLAP as appropriate for special classes for slow learners. In school Y (streamed) teachers had negative views on PLAP and instruction did not match to the needs of pupils as what was on paper did not match classroom practice. A one way analysis of variance reveal a significant difference among the three classes in school X which streams, $F(2, 94) = 18.28$, $p < 0.01$. Tukey's HSD test indicates that the average score for grade 5A is significantly higher than the other two classes; however, the mean for grade 5C is not statistically greater than the observed grade 5B. The effect size of this result is medium ($f = 0.29$), and there was a low degree of association between the classes and pupils achievement scores (estimated omega squared = 0.26). In a streaming school Y, A one way analysis of variance reveal that a significant difference among the three classes, $F(2,104) = 92, 93$, $p < 0.01$. Tukey's HSD test indicated that the mean average of grade 5A class is significantly higher than the other two classes; in turn the mean of grade 5B is statistically greater than that of the grade 5. The effect size is quite large ($f = 1.79$), and there was a moderate association between different classes and pupils achievement (estimated omega-squared = 0.39).

Keywords:. Achievement, Performance Lag, Equivalent, stream, mixed ability, placement

Introduction

According to the Zimbabwe Education act of 1996, the education system follows a 7+4+2+4 standard model of education. That is 7 years primary education, with children starting grade 1 at age 6 and completing grade 7 by the age 12; 4 years secondary education (form 1 to 4), followed by 2 years of high school (form 5 to 6) and 4 years university education (Education Act, 1996 cited by Nkoma et al 2013). There is automatic promotion from grade 1 to form 4, and children repeat a grade/form at parental request. Each school calendar year has three learning terms. The purpose of this study is to determine if teachers' perceptions on Performance Lag Address Programme (PLAP) match their classroom practice in P2 (Former group B) primary schools in Mutare urban primary schools. P2 (former group B) schools are located in high density areas (formerly African townships and are low fee paying schools (Nyagura, 1991)

The performance of the Zimbabwean education system seemed stable from 1995 up to 2000 (Makopa 2011). The situation began to deteriorate from 2000 onwards after the agrarian reform programme was introduced. The programme focused on reallocating the former white commercial farmers owned commercial lands to the indigenous people. The ensuing socio-political milieu did not go down well with some western countries who later applied targeted sanctions on political figures in Zimbabwe as a measure to limit trading linkages and support with and from those developed nations (Nkoma et al 2013). The performance of grade seven candidates, nationally, in 2006, show that 8.8% of students passed none of the four subjects while 38.8 % passed the four subjects. Urban schools performed better due to better resources and more experienced teachers than rural schools (Chakanyuka et al 2009). At ordinary school level, in 2002 and 2003 respectively, 13.8% and 12.8% of learners passed with five or more subjects to get a full Ordinary level certificate (Zimsec 2002b). The proportion of candidates passing at ordinary level dropped from 63% in 1980 to 13% in 2000 (Zimsec 2002b). The decreased performance was attributed to

a) The rapid expansion of the education system in 1980, and the introduction of automatic promotion

in 1981, overstretched the Ministry's resources and capacity to service the school system effectively and an increase in pupil/teacher ratios compounded by the increase of untrained teachers especially in rural areas.

b) The low book to pupil ratio being experienced in most rural districts affected the pupils' performance in examinations.
c) Rural schools have a high staff turnover which at times leave pupils without teachers for long periods of time (Chakanyuka et al, 2009)

A study done in Manicaland Province, Zimbabwe, after realizing the subdued teaching and regressed learning between 2006 and 2008 caused by the socioeconomic meltdown resulted in increased zero percent pass rates at both primary and secondary levels (Nkoma et al 2013; MOESAC, 2013). A significant positive relation among the number of years in school and the achievement lag (r=0.99) and the achievement lag widens with increase in the years in school. The overall average achievement lag was 4 years and approximately 1 year longer in school increased the achievement lag on average with a time span between 1 and 2 terms using a sample size of 18417 students (MOESAC, 2013).

Current grade seven pass rates remained below 30% and 50% of students do not continue schooling after grade seven. More than one million secondary aged people are out of school with few educational or employment options (UNICEF, 2011). Studies done in Zimbabwe after 2008 show that the quality of education was being affected by shortages of resources in schools, teacher-pupil ratio, low moral due to poor working conditions, inadequate remuneration, economic sanctions and hyperinflation caused brain drain, low book to student ratio, inadequate supervision, and poor incentives (Chevedza, Wadesango and kurebwa, 2012; Chakanyuka et al, 2009; Makopa, 2011; Nkoma et al 2013). The decreased achievements from 1980 to 1995 and from 2000 to 2010 appear to have similar reasons of shortages of material and human resources, low book to student ratio and teacher-pupil ratio**.** The causes of underachievement in school are complex and may be difficult to determine. The student may have a learning style that is not accommodated in class; feel overwhelmed and incapable of doing better; low teacher expectations; school activity not challenging enough and inadequate prior instruction (Ireson and Hallam, 1999; Kulik and Kulik, 1992).

Schools are under pressure to meet certain levels of pupil achievement and to improve performance/pass rates in their schools. Some primary schools have introduced streaming or ability grouping across classrooms, ability grouping across schools (for boarding schools) and the increased demand for special classes for slow learning students (Nkoma, 2013). Though students are streamed in Zimbabwe they follow the same curricula and write the same terminal examination after 7 years and 4 years at primary and secondary levels respectively. Steaming or ability-grouped class assignment is an approach where students are assessed and placed into specific classrooms with peers of similar ability. Students in high, middle and low classes in many programs use the same text material and follow the same course of study (Kulik and Kulik, 1992). This is a form of whole-group instruction that is characterized by a single and a set curriculum which is delivered at the same pace for all students within the classroom. There are, however, individual differences among students' grouped together for instruction (Boaler, 1997), however teachers of these classes have been found to treat the entire class as being of exactly the same achievement level (Wiliam and Bartholomew, 2004) but this may also occur in mixed ability (achievement) classes (Tomlinson et al., 1997). Meta-analysis reviews (Kulik and Kulik , 1992) have shown that the effects of grouping programs depend on whether;

a) Ability groups follow the same curricula
b) Programs in which all groups follow curricula adjusted to their ability and
c) Programs that make adjustments for the special needs of highly talented.

Findings by Kulik (1992) indicate that programs that entail minor adjustments to course content for ability groups usually had little or no effect on student achievement and secondly programs where school administrators assign pupils to high, middle and low classes depending on some test scores and expect all groups to follow the same basic curriculum. Pupils in the middle and lower classes learn the same amount as equivalent pupils from mixed classes by about one month on a grade equivalent scale and lastly grouping programs that entail more substantial adjustment of curriculum to ability have clear positive gains on children. Cross-grade and within-class programs that provide both grouping and curricular adjustment in reading and arithmetic outperform equivalent control students from mixed-ability classes by 2 to 3 months on a grade equivalent scale.

Every child in Zimbabwe received a full set of core textbooks: six million were procured and delivered to all 2300+ secondary schools while a national survey conducted in 2011 to assess the effectiveness of textbook distribution to primary schools confirmed that 99% of all schools registered with the Ministry of Education, Sport, Arts and Culture received a full set of core texts (UNICEF 2011). The Ministry of Education, Sport, Arts and Culture introduced Performance Lag Address Programme (PLAP) in 2012 as an initiative to address the achievement gaps mainly caused by the regressed learning and subdued teaching between 2006 and 2008 (The

Herald, 2013). PLAP is a result of deep-stick evaluation which focused on assessing the teacher-learning process, teacher-pupil records, resources provision, and monitoring and evaluation programs (The Herald, 2013). A manual for teachers (Muzawazi and Nkoma, 2011) was written in order to address the problems of underachievement. The programme involves re-visiting the syllabus and targeting concepts that have been persistently difficult for pupils to catch up on. The goal is to assess students and instruction beginning at the last point of success. The programme emphasizes frequent and flexible within class ability grouping. In within class ability groups, the teacher forms small ability groups in his/her classroom and provides each group with instruction appropriate to its level of aptitude. Students remain within their classrooms for the whole school day. The teacher uses different instruction and different instructional materials for within-class groups. Differentiated instruction for different groups is important for the success of within-class groups (Kulik and Kulik, 1992). Differentiation can be defined as an approach to teaching in which teachers proactively modify curricula, teaching methods, resources, learning activities, and student products to address the diverse needs of individual students and small groups of students to maximize the opportunity of each student in a classroom (Bearne, 1996; Tomlinson, 1999). Differentiation is a pedagogical, rather than an organizational approach (Strading and Saunders, 1993). It can be viewed as modification of teaching and learning routines to address a broad range of learners' readiness levels, interests and modes of learning (Tomlinson, 1999, 2001) Flexible grouping allows students to be exposed to different contexts, instructional content and pedagogy (Strading and Saunders, 1993). Sorenson and Hallinan (1992) noted that teachers are able to adapt their methods of instruction and instructional materials to students within smaller, homogenous groups and retaining students' attention. Teachers need to learn this form of classroom management in order to create a learning environment sensitive to the individual levels of readiness (Tomilson, 1999). Thus, PLAP leaves teachers with the need to address learner variance in the regular classroom, rather than organizational arrangements (Jackson and Davis, 2000; Stradling and Saunders, 1993) that have often served to relieve the classroom teacher of primary responsibility for attending to the needs of students who diverge markedly from the norm. PLAP emphasizes teachers to adjust curriculum and materials so that each student has equal access to high quality instruction (Shoenfeld, 1999). PLAP implies within class ability groups where students receive instruction suited to their varied readiness levels and learning preferences, thus enabling them to maximize the opportunity for growth (McLaughling and Talbert, 1993).

The researcher has been an educational psychologist in the Ministry of Education and has observed that teachers in Zimbabwe at primary and secondary level do their scheme-cum plans for the whole school term during holidays and teach students when schools open without considering their prior achievement levels. Thus their plans are for particular grade level curricula and hence perceived average ability of students by teachers. This is analogous to whole class instruction which is characterized by using textbook-dominated curriculum (Reis et al., 1993) and movement through the curriculum is at the same pace using the same methods and materials (Goodlad, 1984) and instruction for the whole class at the same time (Good and Brophy, 1984). Thus the teacher makes virtually all of the choices in the classroom, including what questions to ask and which to answer and textbooks are the most common medium for teaching and learning. Such classroom characteristics can be viewed as teacher centered (Cuban, 1984). In teacher-centered classrooms, there is more teacher talk during instruction which occurs mainly in a whole-class setting. Small group work or individual instruction occurs less frequently. In these classrooms teachers ask questions for which there is one answer while imploring students to become more independent thinkers and learners (Goodlad, Soder and Sorotnik, 1990). There is heavy reliance on teacher initiated drill and recitation (Cuban, 1984). When students are placed into small groups, they work on the same activities and lessons (Kulik and Kulik, 1992). The disadvantage of whole class instruction is that students move through the curriculum without regard to their prior knowledge or levels of readiness (Good and Power, 1976).

Purpose Of The Study

The Zimbabwe education system is being faced with some challenges; MOESAC (2013) indicated that the last curriculum revision was done in 1983 and needs to be updated to factor in changes in societal and technological changes and the majority of school head-teachers, who should undertake school-based supervision of teachers, are not receiving training specific to supervision partly because of the freezing of posts which resulted in vacant district based inspectors and inadequate funding for transport. Hence both qualified and unqualified teachers have received little support to be able to teach effectively. However, MOESAC plans to introduce Teacher Minimum Standards (TMS) as a mechanism for monitoring and improving teacher performance. It is in light of the needs of PLAP's pedagogical requirements and the constraints of the Ministry of Education, Sport, Arts and Culture (MOESAC) that the researcher needs to determine if teachers' perception on PLAP match their classroom pedagogy.

Justification

There is no policy on streaming at primary school level but secondary level in Zimbabwe (Nkoma, 2013) and schools need to be seen performing highly by parents, community and by the Ministry of Education. School head-teachers need to find ways to improve performance of pupils and the methods being used are streaming or heterogeneous grouping while using PLAP recommendations at primary school level. The findings from the study on the effects of streaming or mixed ability will aid in policy formulation at primary school level.

Hypotheses

a) There are no significant differences in achievement between grade 5 classes in school X.
b) There are no significant achievement differences between grade 5 classes in school Y
c) There are no significant gender differences in achievement in school X
d) There are no significant gender differences in achievement school in school Y.
e) There are no significant achievement differences between boys in school X and girls in school Y.
f) There are no significant differences between girls in school X and boys in school Y.

Research Questions

a) Are there differences in dispersion of scores between grade 5 classes in schools X and Y

Research Methodology

Grade 5 classes were purposely selected and pupils were not randomly assigned to treatment groups. All grade 5 classes in school X participated while upper, middle and low classes were purposely selected in school X, which streams. A quasi-experimental design is appropriate for this study as it can be integrated with individual case study and allows some statistical analysis to take place. Interviews were done to individual teachers on their perception of PLAP and pupils were given a mathematics achievement test to determine average achievement levels in their respective classes. A class teacher's responses and his/her class's achievement were tallied to the teaching strategy adopted in the class.

Sample Size And Sampling Method

Two primary schools were randomly selected from P2 (former group B) in Mutare urban schools which has 14 primary schools. Initial interview with two school administrators indicated school X is mixed ability while school Y streams. Three grade 5 classes were purposely selected from school Y which has a total of six classes. These are high achieving class, middle achieving class, and a low achieving class and these which were coded classes A, B, and C respectively. All grade 5 classes from school X were purposely selected. A total sample size of 195 (Boys = 91; Girls = 104) from all pupils in the classes participated in the study. The breakdown of pupils by school, gender and grade is given in table 1 below.

Table 1. School by class size and gender

School	Classes					
	A		B		C	
	Boys	Girls	Boys	Girls	Boys	Girls
X	14	19	11	19	12	13
Y	18	21	19	18	17	14
Total by gender	32	40	30	37	29	27
Total	72		67		56	

A total of six grade 5 teachers (three from each school) were interviewed on their perceptions of Performance Lag Address programme (PLAP).

Instruments and Data Analysis

Grade 5 pupils were assessed at the end the year (third term, 2013). An adapted Wide Range Achievement-Revised (Jastak, Wilkinson and Wilkinson (1984) - mathematics sub-test was used. The test is allowed by the Ministry of Education to assess pupils' achievement levels. Pupils' mean scores were translated to grade equivalence. For example grade 5 pupils are expected to be achieving at upper fifth grade level (which has a score of 31 on the test) as they were evaluated towards end of the end of year. Three months is equivalent to a term's education in Zimbabwe. 4B means that pupils are achieving at lower fourth grade level or grade 4 three months (first term) and 5E means upper fifth grade level or grade 5, third term. Grade 5M means an achievement equivalent to mid fifth grade level or grade 5, 6months. See Appendix 1 and 2 for transformations to grade equivalence and terms or months.

A one way analysis of variance was used to compare differences in mathematics achievement within a school and a t-test for independent samples was used to compare gender differences.

Results

Interviews with grade 5 teachers in school X (mixed ability) indicated the following: in general there are flexible within class ability groups which are done fortnightly. Class A teacher was positive about the benefits of PLAP by saying that it is involving but caters for mixed ability groups and instruction vary according the level of their abilities and this helps a child to grasp concepts that were initially difficult. Class B teacher was negative on PLAP and viewed it as time consuming and too much paper work and that it is a repetition of re-

medial lessons. Class C teacher commented that it is time consuming for teachers and high achievers and that PLAP is most appropriate for special classes of low achieving pupils.

Interviews with teachers in a streamed school X indicated that they change within class ability groups weekly or fortnightly but it is difficult for low ability children in low classes to change to higher ability classes. In general they noted too much paper work and hence cheating in this exercise. They noted that implementation is difficult during the learning process as the 30 minute lesson period is not adequate and the school lacked resources. For example they borrow textbooks from lower grades for a few days and the school does not have material specific for the children's needs.

The first hypothesis states that there are no significant differences in achievement between classes in a mixed ability school X.

Table 1: Standard deviation and mean scores of pupils for a mixed ability school X (Class A, Class B and Class C)

	Grade 5A	Grade 5B	Grade 5C
SD	2.980	2.38	2.44
M	33.55	29.90	30.72
n	33	29	25

Table 1 shows that pupils in grade 5B received lowest scores (M =29.90, SD = 2.38) than did those in grade 5A (M = 33.55, SD = 2.980) and grade 5C (M = 30.72, SD = 2.44). When the mean scores are transformed to grade equivalence, (see Appendix 1 and 2) grade 5A is achieving at upper sixth grade level (a grade above grade 5) while C class is achieving at upper fifth grade level (grade equivalence). Grade 5B is achieving at upper fourth grade level (a grade below current grade level). The mean score differences between grades 5A and 5C is 3.65 which translate to 2 academic years.

Table 2: One Way ANOVA summary table: Achievement in school X-mixed ability by class A, Class B and Class C)

Source of variation	Sum of Squares	df	Mean Square	F	p
Between groups	227.81	2	113.91	18.28	0.01
Within groups	585.91	94	6.23		
Total	813.72	96			

F = 18.28, df = 2, 94, p < 0.01 Significant difference reject null hypothesis

The above table 2 indicates that there are significant differences hence the null hypothesis is rejected. Using the Tukey's *HSD* test; HSD = 1.92; where *HSD* is a critical difference between the means that must be reached or exceeded in order to identify a reliable difference between the means. Any absolute difference between the pair of means that is 1.92 or greater is statistically significant at the 0.01 level. The matrix in table 3 shows the three means and identify the absolute differences between every possible pair. Two of the means (grade 5A and grade 5C) reach or exceed the *HSD* of 1.92.

Table 3: Pair-wise comparisons between all means using the Tukey HSD test

		Grade 5 classes		
		Grade 5A	**Grade 5B**	**Grade 5C**
Mean		33.55	29.90	30.72
Grade 5A	33.55	----	3.65*	2.83*
Grade 5B	29.90	----	----	0.82
Grade 5C	30.72	-----	----	----

The asterisk (*) indicates that the absolute difference between the means (pair-wise comparison) is significant at 0.01 level using the Turkey HSD test

Using Cohen's (1988) effect size for the F ratio; f = 0.29 indicating that the effect size is medium.

To identify the nature of the mean differences, a post hoc test (Tukey *HSD* test) is used. The estimated omega-squared indicates the degree to which the different classes accounts for the variation or change in mathematics achievement. The estimated omega-squared value is 0.26. It is concluded that the different classes accounted for approximately 26 % of the variance in the dependent measure (mathematics achievement). There is a low degree of association between grade 5 classes and mathematics achievement.

Summary

A one way analysis of variance reveal a significant difference among the three classes, F (2, 94) = 18.28, p < 0.01. Tukey's *HSD* test indicates that the average score for grade 5A is significantly higher than the other two classes; however, the mean for grade 5C is not statistically greater than the observed grade 5B (see table 1 above). The effect size of this result is medium (f = 0.29), and there was a low degree of association between the classes and pupils achievement scores (estimated omega squared = 0.26).

The second hypothesis states that there are no significant differences in achievement between classes in a streamed school Y.

Table 4: Mean and standard deviation scores of pupils by class in school Y (Class A, Class B, and Class C)

	Grade 5A	**Grade 5B**	**Grade** 5C
M	37.08	32.54	25.13
n	39	37	31
SD	3.48	2.55	4.81

Pupils in grade 5C received lowest scores (M = 25.13, SD = 4.808) than did those in grades 5A (M = 37.08, SD = 3.482) and 5B (M = 32.54, SD = 2.55). When the mean scores are transformed to grade equivalent (see appendix 1 and 2), grade 5A is achieving two grades above grade five (upper seventh grade) while class C is achieving at upper third grade level (two grades below grade 5 level). Grade 5B is at lower sixth grade level. The mean difference between grades 5A (best) and 5C (lowest) is 11.95 which translate to 4 academic years.

Table 5: One Way ANOVA summary table: Achievement by grade (Class A, Class B and Class C)

Source of variation	**Sum of Squares**	**df**	**Mean Square**	**F**	**p**
Between groups	2479.33	2	1239.67	92.93	0.01
Within groups	1387.44	104	13.34		
Total	3866.77	106			

F = 92.93, df = 2,104, p < 0.01 Significant difference reject null hypothesis

Table 5 above shows that there are significant differences and hence the null hypothesis is rejected.

Using the Tukey's *HSD* test - *HSD* = 2.59; where *HSD* is a critical difference between the means that must be reached or exceeded in order to identify a reliable difference between the means. Any absolute difference between the pair of means that is 2.59 or greater is statistically significant at the 0.01 level. The matrix in table 5 shows the three means and identify the absolute differences between every possible pair. All the means (grades 5A, 5B and 5C) reach or exceed the *HSD* of 2.59 is statistically significant at the 0.01 level.

Table 5: Pair-wise comparisons between all means using the Tukey HSD test

		Grade 5 classes		
		Grade 5A	**Grade 5B**	**Grade 5C**
	Mean	37.08	32.54	25.13
Grade 5A	37.08	----	4.54*	11.95*
Grade 5B	32.54	----	----	7.41*
Grade 5C	25.13	-----	----	----

The asterisk (*) indicates that the absolute difference between the means (pair-wise comparison) is significant at 0.01 level using the Turkey HSD test

Using Cohen's (1988) effect size for the F ratio; f = 1.79 indicates that the effect size is quite large suggesting that how classes are streamed have a powerful effect on achievement.

To identify the nature of the mean differences, a post hoc test (Tukey *HSD* test) is used. The estimated omega-squared indicates the degree to which the different classes accounts for the variation or change in mathematics achievement. The estimated omega-squared value is 0.39. It is concluded that the different classes accounted for approximately 39 % of the variance in the dependent measure (mathematics achievement). There is a moderate degree of association between grade 5 classes and mathematics achievement.

Summary

A one way analysis of variance reveal that a significant difference among the three classes, F (2,104) = 92, 93, p < 0.01. Tukey's *HSD* test indicated that the mean average of grade 5A class is significantly higher than the other two classes; in turn the mean of grade 5B is statistically greater than that of the grade 5C (see table 4 above). The effect size is quite large (f = 1.79), and there was a moderate association between different classes and pupils achievement (estimated omega-squared = 0.39)

The first research question states that there are differences in variability of scores between classes in schools X and Y

Table 6. Comparison of mean scores and standard deviation by grade in each school.

School	**Grade**								
	A			**B**			**C**		
	N	**M**	**SD**	**N**	**M**	**SD**	**N**	**M**	**SD**
X	33	33.55	2.980	30	29.90	2.381	24	30.72	2.441
Y	39	37.08	3.482	37	32.54	2.545	31	25.13	4.808

There is greater dispersion of scores in school Y, classes C and B while the least variance is school X, class B. however, the highest mean value of 37.08 (equivalence to upper seventh grade level) is in school Y with the second highest dispersion of scores of 3.482. The least dispersion of scores is in school X, class B with a score of 2.381. However, this class has the mean value of 29.90 which translates to achieving at lower fifth grade level. The lowest mean score of 25.13 is found in school Y where pupils are achieving at lower third grade level.

The third hypothesis states that there are no gender differences in achievement in school X

Table 7. Gender differences in achievement in school X

	N	**M**	**SD**	**t-value**	**d.f**	**Sig**
Boys	37	31.33		-0.523	86	0.05
Girls	51	31.78				
Not significant at 0.05 level						

There are no significant differences between males and females in school X and hence we fail to reject the null hypothesis. However the negative t-value indicates that girls are achieving slightly ahead of boys. The difference in mean values between boys and girls (that is 0.45) translates into approximately 3 months difference.

The fourth hypothesis states that there are no significant gender differences in achievement in school Y

Table 8. Gender differences in achievement in school Y

	N	M	SD	t-value	d.f	Level of significance
Boys	54	32.04	6.731	0.055	105	0.05
Girls	53	31.98	5.362			
No significant differences at 0.05 confidence interval						

The above table shows that there are no significant differences in achievement between boys and girls at 5% level of significance in school Y. A difference of 0.06 in mean values translates to negligible grade differences.

The fifth hypothesis states that there are no achievement differences between boys in school X and girls in school Y.

Table 9. Gender differences between school X- males and school Y-females

	N	M	SD	t-value	d.f	Level of significance
X-Boys	37	31.33	3.397	-0.406	88	0.05
Y-Girls	53	31.81	6.306			
No significant difference at 0.05 confidence interval						

The above table shows no significant differences in achievement between males in school X and girls in school Y. The mean difference of 0.51 indicates that girls in school Y are head of boys in school X by 3 months.

The sixth hypothesis states that there are no significant differences between girls in school X and boys in school Y.

Table 10. Gender differences achievement between girls in school X and boys in school Y

	N	M	SD	t-value	d.f	Sig
X-Girls	51	31.65	2.855	-0.561	102	0.05
Y-Boys	53	32.16	6.833			
No significant difference at 0.05 confidence interval						

The above table shows that there are no significant differences in achievement between males in school Y and girls in school X. However, when mean scores are considered boys in school Y are performing better than girls in school X. The mean difference of 0.51 translates to difference of 3 months that is one term.

Summary On Gender Differences

The results indicate no significant differences in achievement by gender in schools X and Y. However when mean score differences are considered, girls are better off by 3 months in school X (mixed ability) while there are negligible mean differences in school Y (steaming). The mean score difference between school X (girls) and school Y (boys) translates to 3 months indicating that boys in school Y are ahead of girls in school X.

Discussion

In school X, (which has mixed ability classes) significant differences were found with a medium effect size. Significant differences were in grades 5A and 5C. Class A was achieving a grade above fifth grade level while class B was performing a grade below grade 5. The differences in classes' achievement may depend on how PLAP is implemented by different teachers. For the low achieving class B, the teacher comments indicated that it is time consuming for teachers and high achievers and that PLAP is most appropriate for special classes of low achieving pupils. To quote ' PLAP is time consuming for teachers and high achievers, after all we had already planned for the class…..it is appropriate for special classes of low achieving children" Thus the teacher may dilute the academic curriculum in an effort to teach wide range pupils (Gamoran and Weinstein, 1998). Within class grouping can be effective when assignment and instruction are closely related to pupil capacities (Slavin, 1987). Class A teacher who commented that though PLAP is involving it caters for mixed ability groups and instruction vary according the level of their abilities and this helps a child to grasp concepts that were initially difficult. The teacher appeared to have modified instruction, which led to advances in achievement for all pupils in different within class ability groups (Kulik and Kulik, 1992). Class B teacher was negative on PLAP and viewed it as time consuming and too much paper work and that it is a repetition of remedial lessons. The class is achieving at grade equivalent (upper fifth grade) which might imply whole class instruction which is characterized by using textbook-dominated curriculum (Reis et

al., 1993) and movement through the curriculum is at the same pace using the same methods and materials (Goodlad, 1984) and instruction for the whole class at the same time (Good and Brophy, 1984).

Significant differences were found between classes in a streaming school Y and the effect size was quite large. The mean scores of all the classes were statistically significant with the highest being grade 5A (high stream). The best class is achieving two grades above grade five levels while the low stream class is achieving two grades below grade 5 level. The results are in tandem with those found by Nkoma, (2013). With time, high level students gain more and more, while low level students fall further behind (Gamoran, 2002). Interviews with teachers indicated that PLAP involves too much paper work and hence cheating in this exercise and also lack of resources. Such perceptions influence the way they teach. For example the low ability class teacher said "these children learn better with repetition and drill….but l know that their achievement levels are well below grade 5". The statement implies whole class instruction using grade 5 syllabus. All teachers indicated that they do not know how to modify instruction for high and low achieving pupils. Homogenous classes, though it may seem easier to manage, encourages whole-group instruction that is characterized by a single and a set curriculum which is delivered at the same pace for all students within the classroom. There are, however, individual differences among students' grouped together for instruction (Boaler, 1997), but teachers of these classes have been found to treat the entire class as being of exactly the same achievement level (Wiliam and Bartholomew, 2004). Students in high, middle and low classes in many programs use the same text material and follow the same course of study (Kulik and Kulik, 1992).

The effect sizes of schools are different with school Y having a large size. Streaming does not provide equal opportunities for achievement and to long term equal outcomes, particularly when students receive different treatments and instructions from teachers and schools (Oakes, 1985; Gamoran et al., 1995; Michaels, 1991)

There is greater dispersion of scores in all classes in school Y which streams than in a mixed ability school X. This finding is similar to that found by Nkoma (2013) in P1 (former group A) primary schools. Teachers in school Y commented that there is grouping of pupils within the class on paper but pupils do not receive differentiated instruction as the 30 minute lesson period is not adequate. Also they said that there is more paper work than teaching and a lot cheating because what is on paper does not happen in classroom practice. Teachers need to address learner variance in the classroom rather than through organizational arrangements (Jackson and Davis, 2000) that have often served to relieve the teacher of the responsibility of attending to the needs of pupils who diverge markedly from the norm. Teachers therefore need to adjust curriculum, materials, and support to ensure that each student has equity of access to high quality learning (Schoenfeld, 1999; Gamaron and Weinstein, 1995). General education teachers may reject adapting instruction for individual learner needs because they feel doing so calls attention to pupil differences (Schumm and Vaughn, 1995) and they are unaware of learner needs (Schumm and Vaughn, 1995). Teachers may not know how to modify curriculum for pupils whose proficiencies extend beyond those prescribed by grade level curricula (Hertberg, 2003).

The results show insignificant gender differences within and between schools indicating gender parity in mathematics achievement. This was inconsistent with findings Nkoma et al (2012). The study done Nkoma et al (2012) was carried out soon after the economic meltdown between 2006 and 2008 when there was regressed learning and teaching in schools.

Conclusion

The null hypotheses for achievement between classes is rejected as significant differences in achievement were found within mixed ability and streaming schools and the effect size was higher in a streaming school X than is a mixed school. In school X, Class A performed 2 years above class C and the difference can be attributed to differentiated instruction in class A. Higher dispersion of scores was found in a school Y which streams suggesting extreme scores by pupils. Insignificant but minor gender differences were found within and between all school types. In school Y, which streams, the difference between high achieving class A and low achieving class C is 4 years. The difference might be attributed to substantially less material and lower quality of instruction by teachers who have lower expectations of low ability students (Slavin and Braddock, 1993) in grade 5C. The findings suggest that differentiated teaching strategies are needed to cater for varied needs of pupils. Future research should compare urban, peri-urban and rural primary and secondary schools. Perceptions of students on PLAP should be in cooperated in future research.

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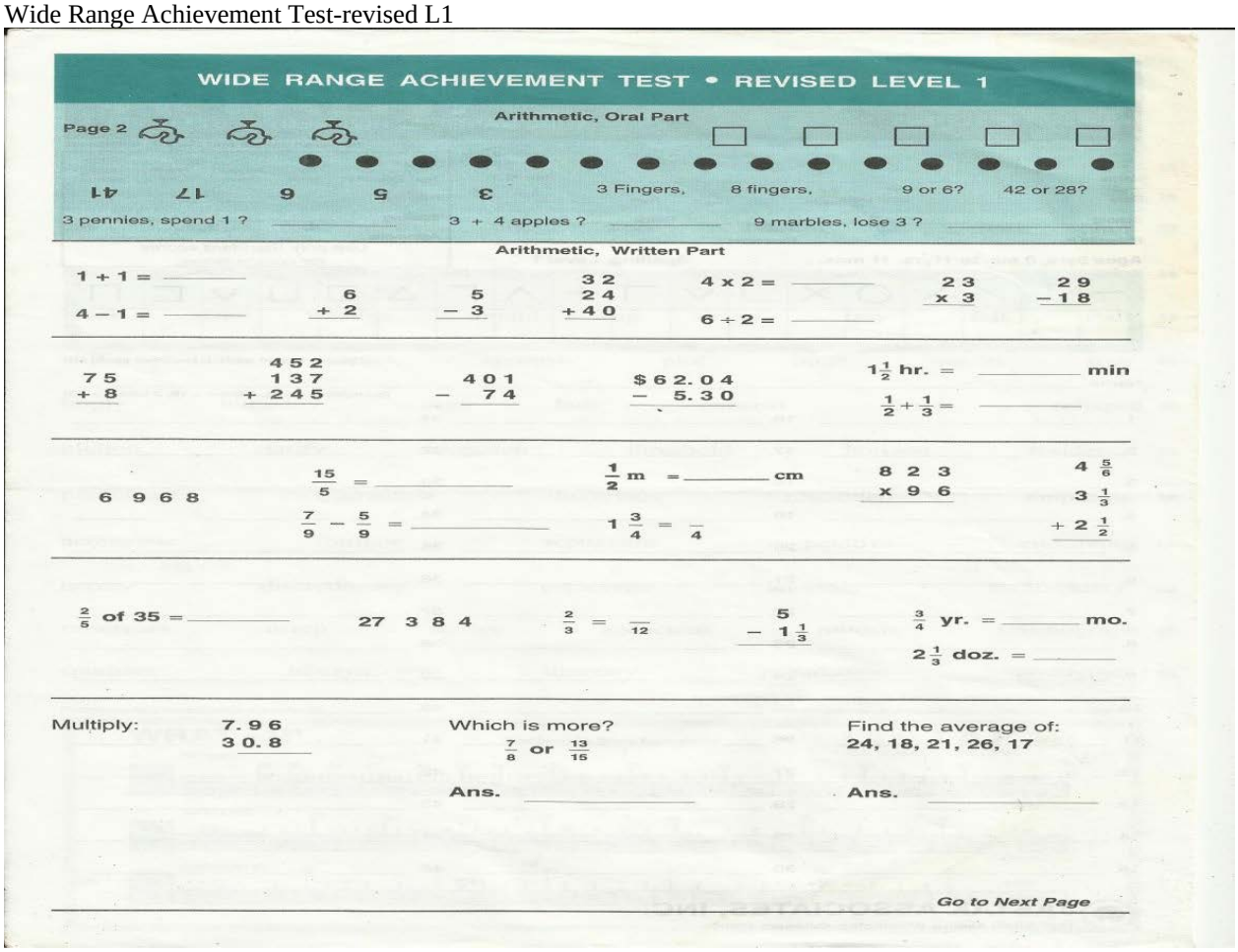
Appendix 1

Wide Range Achievement Test-revised L1



WIDE RANGE ACHIEVEMENT TEST • REVISED LEVEL 1

Page 2

Arithmetic, Oral Part

41 17 6 5 3 3 Fingers, 8 fingers, 9 or 6? 42 or 28?

3 pennies, spend 1 ? _____ 3 + 4 apples ? _____ 9 marbles, lose 3 ? _____

Arithmetic, Written Part

1 + 1 = _____ 4 − 1 = _____ 6 + 2 5 − 3 32 24 +40 4 x 2 = _____ 6 ÷ 2 = _____ 23 x 3 29 −18

75 +8 452 137 +245 401 −74 $62.04 − 5.30 $1\frac{1}{2}$ hr. = _____ min $\frac{1}{2}+\frac{1}{3}$ = _____

6968 $\frac{15}{5}$ = _____ $\frac{7}{9}-\frac{5}{9}$ = _____ $\frac{1}{2}$ m = _____ cm $1\frac{3}{4}=\frac{}{4}$ 823 x96 $4\frac{5}{6}$ $3\frac{1}{3}$ $+2\frac{1}{2}$

$\frac{2}{5}$ of 35 = _____ 27 3 8 4 $\frac{2}{3}=\frac{}{12}$ 5 $-1\frac{1}{3}$ $\frac{3}{4}$ yr. = _____ mo. $2\frac{1}{3}$ doz. = _____

Multiply: 7.96 30.8

Which is more? $\frac{7}{8}$ or $\frac{13}{15}$

Ans. _____

Find the average of: 24, 18, 21, 26, 17

Ans. _____

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Appendix 2

Transformation of scores to grade equivalent

Raw score	**1-13**	15-16	17-18	19	20	21-22	23-24	25-26	27	28-29	30	31	32-33	34	35-36	37	38-39	40
Grade Equ	**Pre-first**	1M	1E	2B	2M	2E	3B	3E	4B	4E	5B	5E	6B	6E	7B	7E	8B	8E

M- denotes lower of the grade level; that first term of a grade or 3 three months
B- denotes mid of a grade level; the second term of a grade or 6 months
E-denotes upper/end of a grade level; third term of a grade or 9months thus a calendar year of learning time.
For example 2B means lower/bottom second grade or grade 2 first term or grade 2 and 3 months
2M refers to mid-second grade or grade 2 second term or grade 2 and 6months
2E means upper second grade level or grade 2 third term or grade 2 and 9months
NB 9 months might be referred to as a year because it implies a full calendar year of learning in Zimbabwe.