

Performance Lag Address Programme (PLAP): Implications on within class ability grouping in P1 (former group A) primary schools in Mutare Urban, Zimbabwe

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ABSTRACT

The purpose of the research is to determine to what extent do different modes of learning organization (whole class, groups formed within or between home classes) enhance/lower the overall achievement of grade 5 pupils. All grade 5 pupils from a purposely selected P1 school participated in the study ($n = 152$: with class sizes of 58 for A class, class B=46 and class C has 48 pupils class). A quasi-experimental design was opted and in-depth interviews were done with three grade 5 teachers and a head-teacher. Classroom observations were done in three classes. The WRAT L1 revised spelling subtest was used to determine differences in achievement between groups in a class and between classes. The school has a combination of steaming (Class A) and mixed ability classes (Classes B and C). Class A (best class) has 4 ability groups while the other two mixed ability classes have 6 groups each. The results indicate that grade 5 teachers opt for whole class instruction instead of tailoring instruction toward ability groups. Greater dispersion in test scores was found in mixed ability groups in classes B and C. However, overall high variance was found in class A and least in class C. High significant differences were found between classes A and B, classes A and C. Pupils in class B received lower scores ($M = 41.67$, $SD = 5.40$) than did those in class A ($M = 46.83$, $SD = 7.45$), $t_{(102)} = 3.94$, $p < 0.01$, two tailed). The size of this effect is small (effect size $r = 0.36$). The mean score of 41.67 translates to an achievement equivalent to lower fourth grade level (4B) for class B while class A which has a mean score of 46.83 achieves at upper fifth grade level (5E). The achievement lag between class A and class B is 2 years 1 term. Pupils in class C received lower scores ($M = 40.90$, $SD = 4.59$) than did those in class A ($M = 46.83$, $SD = 7.45$), $t_{(104)} = 4.82$, $p < 0.01$, two tailed). The size of this effect is small (effect size $r = 0.42$). The mean score of 40.90 translates to an achievement equivalent to upper third grade level (3E) for class B while class A which has a mean score of 46.83 achieves at upper fifth grade level (5E). The achievement lag between class A and class B is 2 years 2 terms.

Keywords

ability group, Achievement, homogeneous, heterogeneous, curriculum differentiation.

BACKGROUND/INTRODUCTION

The Ministry of Education Sport, Arts and Culture in Zimbabwe launched the Performance Lag address Programme (PLAP) in October 2012 in Manicaland Province after realizing the under-achievement of students at both primary and secondary schools which was caused by the socio-economic meltdown from 2006 to 2008. (Nkoma, et al. 2013; Herald 10Aug 2013). The crisis had considerable impact on several aspects of the education system particularly related to financing, the teacher force, participation, equity and learning outcomes (MOESAC, 2013). A study carried out in Manicaland Province in five randomly selected districts indicated a highly significant positive correlation between achievement lag and number of years in school ($r=0.99$). The achievement gap widens with increase in the years in school. The overall average achievement lag is 4 years. Approximately, 1 year longer in school increased the achievement lag on average with a time span of between 1 and 2 terms (Nkoma et al., 2013). PLAP is a result of deep-stick evaluation. The deep-stick evaluation entailed assessing the teacher-learning process, teacher-pupil records, resources provision, and monitoring and evaluation programmes. In order to close the achievement gaps a manual for teachers was written to specifically address the problems of underachievement (Muzawazi and Nkoma 2011). The programme aims to enhance the performance of pupils from primary to secondary level. The programme involves re-visiting the syllabus and targeting concepts that have proven persistently difficult for pupils to catch up on. The goal is to teach from the last point of success and accelerated learning by students is assumed. The programme emphasizes frequent and flexible within class ability grouping. Research indicates that frequency of grouping matters with respect to

students' academic skills (Robinson, 2009). Students who change groups are exposed to different peer contexts, instructional content and pedagogy. The model of curriculum differentiation emphasizes the use of pre-assessment to determine students' strengths and interests; flexible grouping practices based on those pre-assessed areas; and the differentiation of existing curricula, which suggests increasing the breadth (interests, choices and learning style variation) and depth (lessons for different groups) of the curriculum (Kaplan, 1986; Renzulli, 1994; Van Tassel-Baska and Little, 2003). Thus curriculum differentiation recognizes the differing learning rates, styles, interests and abilities and the need to provide appropriate instruction at students ability levels (Ward, 1980). Tomlinson (1999) suggested four principles that should guide educators as they create a differentiated classroom:

1. Teachers focus on essential concepts, principles and skills of each subject.
2. Teachers attend to student differences, which are guided by their experiences, culture and gender.
3. Teachers realize that assessment and instruction are inseparable
4. Teachers modify content, process and products to meet individual students' level of prior knowledge, learning and expression styles.

The period 2006 to 2008 resulted in regressed learning and subdued teaching. The introduction of multicurrency system saw the return of most teachers and hence observed the achievement gaps by introducing extra-lessons during weekends and holidays for which parents paid for. Teachers focused on student current syllabi or grade level without considering students last point of success (refer to Nkoma et al., 2012 and 2013).

The researcher has been an educational psychologist in the Ministry of Education, Sport, Arts and Culture and has noted that schools in Zimbabwe experience mainly four types of ability grouping: ability grouping across schools (where students are required to pass an entrance test for admission); ability grouping across classrooms or tracking which is otherwise known as streaming in Zimbabwe; within class ability grouping and special classes for slow learning (low achieving) students. Ability grouping across schools occurs in former group A (P1) primary and secondary (S1) schools and boarding schools. P1 and S1 (former group A primary and secondary respectively) schools are located in former European affluent suburbs and were superior in terms of resources and trained teachers. Access to such schools is based on residence. Hence, only those African pupils with high socioeconomic status parents and lived in former

white suburbs could enroll in P1 (former group A) schools (Atkinson. 1982; Zindi, 1996). Within class ability grouping is where a teacher groups pupils within his or her class according to ability. Thus allowing teachers to divide their time among specific subgroups and provide instruction which is sensitive to the needs and abilities of one group, while on the other groups engage in more non-teacher directed instructional activities (Slavin, 1987). Ability grouped class assignment or between classes ability grouping or streaming is where pupils are assigned to self contained classes on the basis of ability or achievement for the whole school day. Special classes for low achievers bring together pupils with learning problems for part or all of their school day (Slavin, 1987 cited by Nkoma, 2013).

The performance lag programme is silent on streaming but explicit on within class ability grouping. Pupils are first assessed within their classrooms and assigned to different within class groups for instructional purposes (Muzawazi and Nkoma, 2011). Studies in Zimbabwe on streaming at secondary school level have shown that low ability groups receive differential treatments and instructions from teachers and are stereotyped and labeled by other students and teachers (Chisaka, 1996; Matavire, Mukavhi and Sana, 2012). More recently at primary school level, Nkoma (2013) found a high significant difference between non-streaming and streaming schools. The achievement levels decreases as pupils find themselves in low streams and the grade equivalent differences (achievement lag) between high and low stream classes translates to 4 years of education while that of a non streaming school is one year. Greater variability in test scores was found in streaming than in a non-streaming school. Elsewhere, other studies have shown negative effects of streaming on low ability pupils in low streams such as low self efficacy, poor quality of instruction and less material, teachers' lower expectations and lowly experienced teachers assigned to these classes and more pupils' misbehavior (Macqueen, 2010; Oakes, 1985; Ballantyne, 2002; Gamoran, 2000; Boaler, 2002; Slavin, 1990 Jung, 2000), while the opposite is true for upper streamed classes.

Heterogeneous classrooms can be divided into two or three small ability groups for reading and mathematics instruction (Slavin, 1993) but the practice also requires sorting students into different groups for instruction. The advantages of within class ability grouping over streaming are: firstly the smaller group sizes enables students to move into higher groups as their achievement improves thus its more flexible. Hoffer (1992) notes that if there are opportunities to move up into a higher group this practice could result in increased competition among students and improvements in overall student effort, and secondly by using small groups it is possible to make necessary changes in the curricula and teaching methods to satisfy the needs of individual students

(Sorensen and Hallinan, 1986). Performance Lag Address Programme encourages schools to engage in ability grouping practices as a method of improving overall achievement and reduce disparities among students with differing ability levels by allowing teachers to tailor their instruction according to the ability level of the group and thus avoiding giving material that is too difficult or easy for most students (Slavin, 1987). The following are assumptions behind within class ability grouping practices:

1. Teachers are able to teach material at a faster pace and at a higher level for higher ability students and provide more slowly paced instruction for lower ability students (Slavin, 1987).
2. Students learn better in a homogenous group where instruction is tailored to match their abilities (kerckhoff, 1986; Oakes, 2005).

Basing on these assumptions researchers theorize that grouped students on average outperform students in non-grouped classrooms (Kerckhoff, 1986; Gamoran, 1986; Hoffer, 1992). This theory is supported by studies on the effects of within class grouping at primary, secondary and post-secondary levels. Lou, et al. (1996) found that students learn slightly more in academically homogenous groups within classes compared to heterogeneous groups or whole class instruction. Lower ability students experienced greater achievement gains if they were in heterogeneous groups within classrooms (Kulik and Kulik, 1996).

On the contrary, the disadvantages of within class ability grouping are:

1. Lower grouped students are exposed to less demanding material, experience greater repetition of material, and less encouragement from teachers (Eder, 1981; Oaks, 2005; Oaks, et al. 1990).
2. In reading instruction students in lower ability groups are taught more focused skills and are less likely to read phrases, sentences and paragraphs that facilitate reading comprehension (Allington, 1980; Chorzempa and Graham, 2006).
3. Students are aware of the group they are placed into and where in the status order this group falls (Eder, 1983; Gamoran, 1986). If mobility between ability groups is limited this can restrict lower grouped students contact with high achieving peers and friendship choices (Hallinan and Sorensen, 1985).

Grouping practices may not result in increased overall achievement between grouped and non grouped students. Grouping may have differential effects on students' achievement depending on the particular ability group assignment. Thus lower

ability students learn less over time while higher grouped students learn more compared to non grouped students (Wilkinson, 1988). Good, et al. (1990) found that simply using more grouping does not lead to more verbalization, critical thinking or collaboration in mathematics learning. Good and Biddle (1988) stated that grouping is not a panacea but a useful instructional format, which when implemented carefully, could enable teachers to achieve goals such as taking different approaches to problem solving, articulating ideas about mathematics.

Boaler, (2011) states that heterogeneous classrooms based on cooperation among students change student perceptions of who they are and who they can be and they teach students about the different qualities and contributions of students who are different from themselves. Cooperative learning refers to instructional strategies in which students work in small cooperative groups or teams to master academic materials and are rewarded for doing well in the group (Slavin and Karweit, 1981). This is a group learning activity organized so that learning is dependent on the socially structured exchange of information between the learners in groups, in which each learner is held accountable for his or her own learning and is motivated to increase the learning of others (Roger, Olsen and Kagan, 1992). Small groups of 4 to 8 pupils are the recommended size for the pursuit of cooperative and collaborative tasks (Johnson and Johnson, 1987; Slavin 1990) with tasks involving enrichment and incremental learning. Cooperative learning is different from competitive learning where in the instructional strategies in which students work in small groups are competitive with one another (Skon, Johnson and Johnson, 1981; Johnson, Johnson and Stanne, 1986) and individualistic learning where instructional strategies emphasize students to work individually avoiding interaction with other students (Johnson, Johnson and Stanne, 1986). However, organizing classrooms so that pupils' work individually is related to practice and revision tasks-promoting increased time on task (Bennett and Blundell, 1983; Hastings and Schweiso, 1995) as well as creating the circumstances for differentiated tasks (Dean, 2001)

Bennett and Cass (1989) investigated the effects of group composition on group interactive processes and pupil understanding by setting three types of groups: homogeneous, heterogeneous and mixed ability. Heterogeneous groups performed poorly while mixed ability worked well. They were more pupil to pupil talks, more suggestions in mixed ability groups than in heterogeneous ones. Also Ireson and Hallam (2001) note that lower attaining children are likely to score at lower levels when they are placed in similar attainment groups than when they are placed in mixed attainment groups. Suknandan and Lee (1998) found that low attainment groups were less motivated to participate in their classroom experience. Reasons given for lower attainment were

that these children were attended by teaching assistants rather than their teachers (Kutnick, et al. 2002) and the quality of discussion was severely limited within these groups because of low cognitive level and lack of differences in pupil perspectives (Webb, 1989)

Schools in Zimbabwe are under pressure to improve on performance hence some primary schools have adopted streaming but with no government policy on streaming at primary but at secondary school level (Nkoma, 2013). Mixed evidence from experimental studies about the impact of ability grouping suggests that the effects may depend on how the practice is implemented (Gamoran, 2000). Within class ability maybe effective when assignment and instruction are closely related to student capabilities at primary school level (Gamoran, 2002). The purpose of this research is to determine to what extent do different modes of learning organization (whole class, groups formed within or between home classes) enhance/lower the overall achievement of grade 5 pupils. Presently there is little if any research on PLAP within class ability grouping in Zimbabwe.

STATEMENT OF THE PROBLEM

Performance Lag Address Programme is an initiative to try to close the achievement lag of students at both primary and secondary school levels. What is emphasized in the module for teachers is assessments and within class grouping and instruction beginning at students' last point of success. Thus curriculum differentiation is emphasized. Curriculum differentiation is the assessment of students' prior knowledge and the subsequent adaptation of grouping and curricular practices based on that assessment (Renzulli, et al. 2000; Tomlinson, 1999). What is not known is how teachers organize their grade 5 classrooms for instructional purposes-that is the seating arrangements which might facilitate learning of specific facts or inhibit learning. If grouping exists there is need to know the number of groups and group sizes in a class and whether they are homogenous or mixed ability. The effects of ability grouping in each class needs to be determined. Theoretically all the ability groups need to be taught material with similar academic content but at a pace and depth that reflects the ability level of students in each group (Slavin, 1987).

RESEARCH QUESTIONS

1. What modes of learning organization do grade 5 teachers use in their classrooms?
2. Are there differences in standard deviations scores between different ability groups in each class?

3. Is there different variability (dispersion) of test scores in different classes?

HYPOTHESES

1. There are no differential effects between classes A (high achieving, homogeneous, streamed class) and B (mixed ability class).
2. There are no differential effects between classes A (high achieving, homogeneous, streamed class) and C (mixed ability class).
3. Different modes of learning organization do not have any effect on achievement gaps associated with social stratification.

METHODOLOGY

Research design

A quasi-experimental design was opted as existing groups of pupils were used in the study. The grade 5 class was purposely selected and the within class ability groups. In-depth interviews were done with three grade 5 teachers and a head-teacher to gather information on classroom organization. Classroom observation was done by the researcher to see instruction strategies that teachers use. Classroom observations lasted for 30 minutes in each class.

Sample

All grade five pupils (n = 152) in three different classes participated in the study. Class A has four ability groups with a class size of 58 pupils. Classes B and C have six ability groups with class sizes of 46 and 48 pupils respectively (refer to table 1 below).

Table 1: class sizes and their respective ability groups

Class	Class size	Ability groups
A	58	4
B	46	6
C	48	6

TOTAL	152	
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Instruments

In-depth interviews done with the Head teacher and three grade five teachers were meant to gather information on classroom organization. Classroom observation and teaching plans which lasted for 30 minutes in each class were meant to determine teaching strategies in these classes.

A Wide Range Achievement test L1 revised (Spelling subtest) was used to compare pupils' achievement levels within and between classes in spelling ability. The test takes 30 minutes to administer (refer to appendix 1). Pupils were assessed during school hours and an invigilator was assigned in each classroom.

Analysis

A test for independent samples was used to determine achievement differences between classes and the effect size of streaming. The standard deviations were meant to determine dispersion of test scores in different ability groups in each class.

The Zimbabwe school calendar is divided into three terms per year of learning with each term consisting of three months. Assessments were carried out at the end of first term in March. Average scores were translated to grade equivalent. For example pupils in grade 5 are expected to have a score of 45. A transformed score gives a grade equivalent of lower fifth grade (5B) which is an achievement at first term

at fifth grade level. A score of 40 translates to pupils' who are achieving at upper third grade level (3E), which is third term grade 3. While a score of 48 means that pupils are achieving at lower sixth grade level (6B). That is pupils are achieving at grade six, first term.

Achievement lag is obtained by subtracting the mean differences between a streamed class and a mixed ability class and converting the scores to years and terms.

Results

The first research question tries to determine the organization of grade 5 classrooms. To determine this, interviews with the head-teacher and three grade 5 teachers were done. They indicated that class A is streamed, homogenous and has the best grade 5 pupils while classes B and C are heterogeneous-mixed ability classes having the lowest homogeneous ability. Class A has four ability groups which are changed fortnightly after an in class test. Classes B and C have each six mixed ability groups and within class tests are administered once per month for planning. At the end of year, examinations in four subject areas (Mathematics, English, Shona and General paper) determine who remains, is promoted or demoted in/from A class. These subjects are examinable at grade 7 level (Nkoma., et al. 2013).

Table 2 below summarizes class size, ability groups and type of grouping in each of the three classes. Class A, the best class, has four homogenous groups while classes B and C have six groups (each having five mixed ability classes and the lowest group is homogeneous).

Table 2. Classes and their related class sizes, type of ability groups and ability group sizes

	Class A	Class B	Class C
Class size	58	46	48

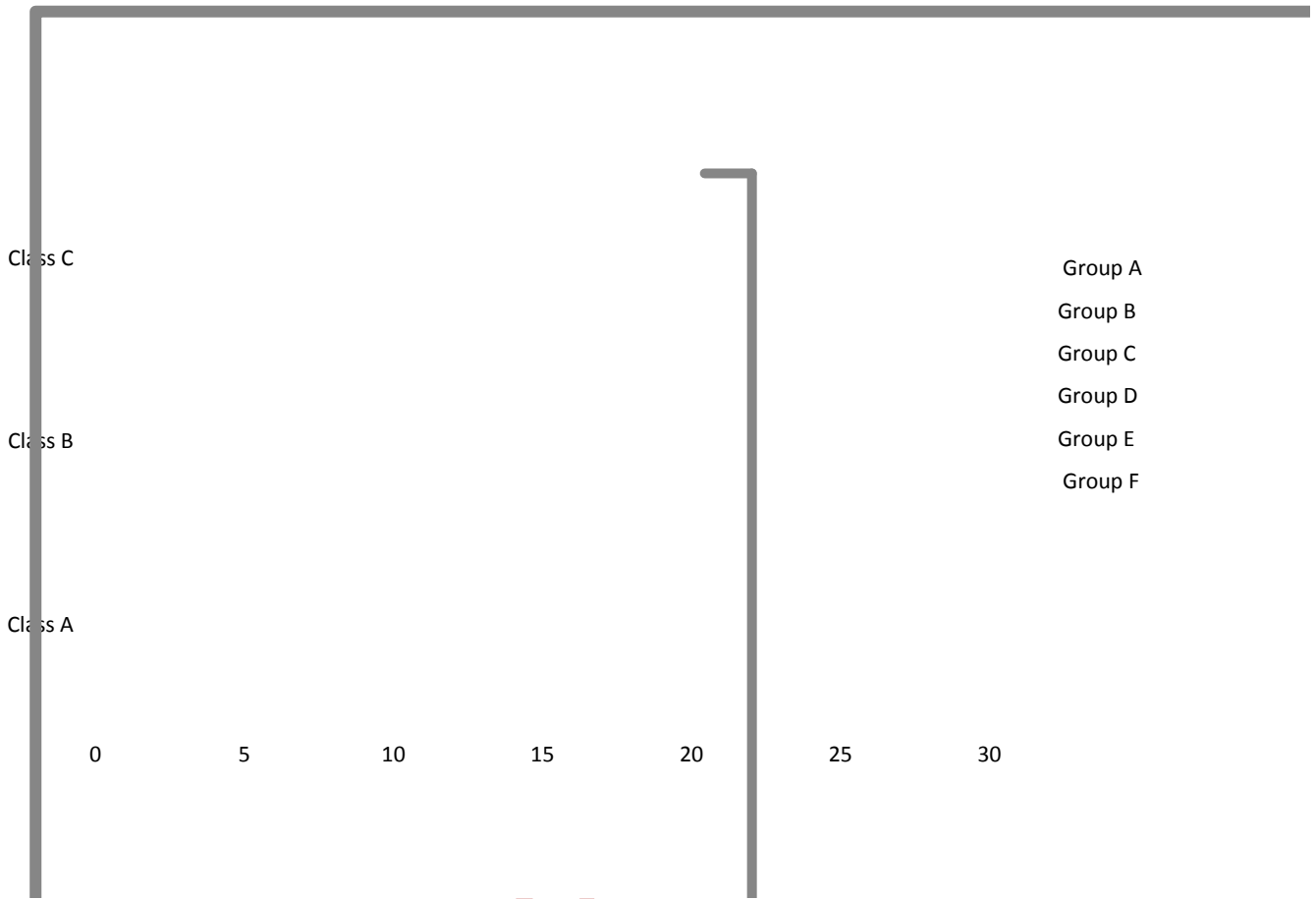
Number of groups	4				6						6					
Group size in each ability group	14	14	15	15	8	8	8	8	8	6	9	9	9	9	8	4
Type of group	Homogenous				Mixed/lowest group homogenous						Mixed/lowest group homogenous					

Classroom observations in classes show that the teachers' uses a whole class approach to teaching with pupils doing classroom work individually. There were little student to student interactions but more of a teacher as a leader in the classroom. Pupils were too passive in the class listening to the teacher. The teachers' plan books did not indicate planning of different ability groups but whole class planning thus enrichment lacks for high achievers. Evaluations in the plan books were general (for example Peter and Joseph have grasped the concepts but Sarah did not). There was no re-planning for Sarah's lack of mastery. Individual record of pupils' achievement lack detail (for example it did not show pupils' strengths and weaknesses for continuance to next level or re-planning using different teaching methods for areas of weaknesses (mastery learning). However,

the seating arrangement is indicative of pupils' groupings. Low achieving students in classes B and C were given low order questions and experienced more repetition of work.

The second research question states if there are differences in variability of scores within different classes. To determine these, standard deviations of each group in each class were computed. Figure 1 below indicates greater variability in test scores in different ability groups in classes B and C which are mixed ability groups but with little variation in the lowest groups F in both classes (which are homogenous). The best class A has small variation in test scores in all ability groups followed by class C and lastly class B.

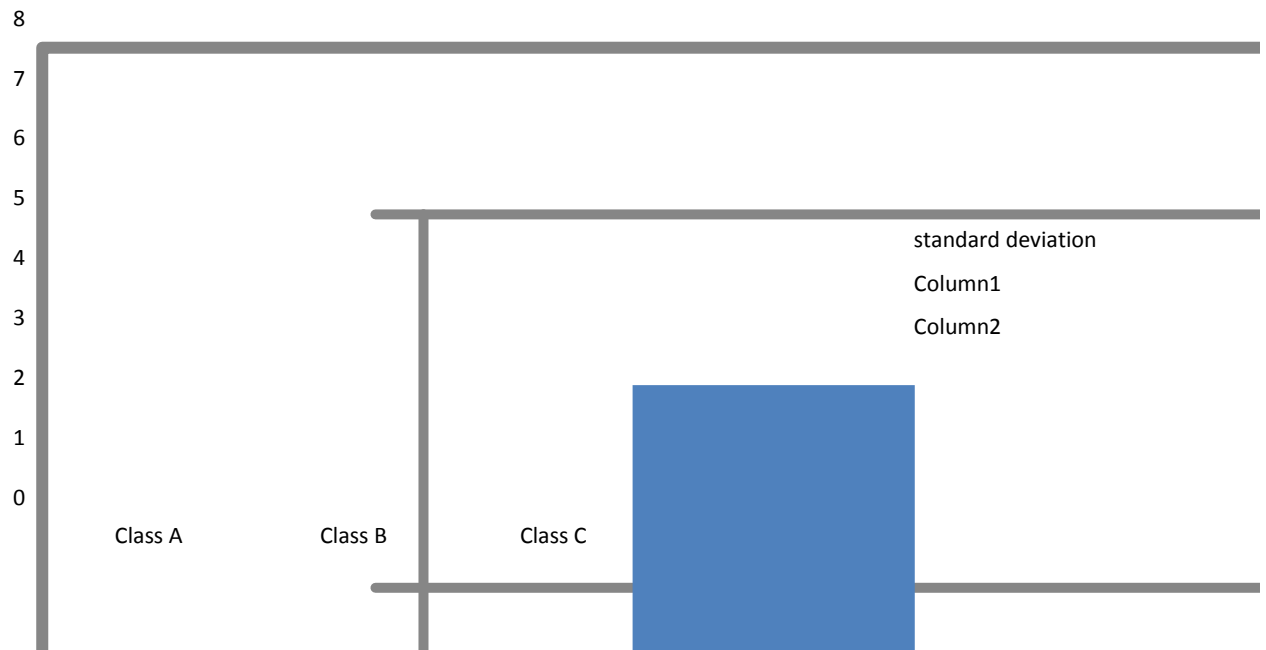
Figure 1: Classes and standard deviations for within class ability groups



The third research question states if there are variability of test scores in different classes. Figure 2

below show that there is greater variability in class A (homogenous) and least in class C (mixed ability).

Figure 2: Standard deviations for A, B and C classes: Between class differences



The first hypothesis states that there are no differential effects between classes A and B.

Table 3. T-test computational table for classes A and B

	N	Σx	(Σx) ²	Mean	Σx ²	SD	df	t-value and significance
Class A	58	2716	7376656	46.83	130348	7.45	102	3.94***
Class B	46	1917	3674889	41.67	81199	5.40		

$t_{(102)} = 3.94 \alpha = 0.01$ highly significant, effect size $r=0.36$

Pupils in class B received lower scores ($M = 41.67$, $SD = 5.40$) than did those in class A ($M = 46.83$, $SD = 7.45$), $t_{(102)} = 3.94$, $p < 0.01$, two tailed. The size of this effect is small (effect size $r = 0.36$). The mean score of 41.67 translates to an achievement equivalent to lower fourth grade level (4B) for class B while class A

which has a mean score of 46.83 achieves at upper fifth grade level (5E). The achievement lag between class A and class B is 2 years 1 term. The second hypothesis states that there are no differential effects between classes A and C.

Table 4: T-test computational table for classes A and C

	N	Σx	(Σx) ²	mean	Σx ²	Sx	df	t-value and significance
Class A	58	2716	7376656	46.83	130348	7.45	104	4.82***
Class C	48	1963	3853369	40.90	81269	4.59		

$$t_{(104)} = 4.82 \alpha=0.01 \text{ highly significant; effect size } r = 0.42$$

Pupils in class C received lower scores (M = 40.90, SD = 4.59) than did those in class A (M = 46.83, SD = 7.45), $t_{(104)} = 4.82$, $p < 0.01$, two tailed. The size of this effect is small (effect size $r = 0.42$). The mean score of 40.90 translates to an achievement equivalent to upper third grade level (3E) for class B while class A which has a mean score of 46.83 achieves at upper fifth grade level (5E). The achievement lag between class A and class B is 2 years 2 terms.

DISCUSSION

Classroom observations show that most of teaching is teacher centered and focused on the whole class rather than different within class groups of pupils. Curriculum differentiation recognizes the differing learning rates, styles, interests and abilities and the need to provide appropriate instruction at students ability levels (Ward, 1980). Also the teaching method is not in line with PLAP recommendation on curriculum differentiation (Muzawazi and Nkoma, 2011). In class A pupils change groups fortnightly and students who change groups are exposed to different peer contexts, instructional content and pedagogy (Robinson, 2009), though instructional content appeared the same in the present study. Large class sizes and or group sizes may be responsible for teachers adopting whole class teaching methods but this cannot guarantee that pupils will actively participate in a learning task (Reid, Forrestal and Cook, 1989). Low achieving students in classes B and C were given low order questions and experienced more repetition of work. This consistent with studies by Oaks, (2005) and Oaks., et al. (1990) who found

that lower grouped students are exposed to less demanding material, experience greater repetition of material, and less encouragement from teachers.

Class A showed less variability in test scores in different groups than are mixed ability classes. This may be because it is the best class and is homogeneous while the other classes have mixed ability students. However, the overall variation in test scores per class was highest in class A (steamed) and least in class C. Similarly, Nkoma, (2013) found greater variability in test scores in schools that stream.

Pupils in classes B and C received lower scores than class A and the achievement lag was 2 years 1 term for class B and 2 years 2 terms for class C compared to class A. Grouping may have differential effects on students' achievement depending on the particular ability group assignment. Thus lower ability students learn less over time while higher grouped students learn more compared to non grouped students (Wilknsen, 1988).

CONCLUSION

Teachers are using the traditional whole class teaching method. There are smaller deviations in within groups in class A than are mixed ability classes but higher variations overall in class A. Class A is achieving best while class C is worse off.

Implications for the classroom

Children do not learn at the same pace and way hence instruction need to be modified to meet needs of all learners by utilizing a variety of instructional methods. Children need to receive modified curricular experiences and tailored instruction for the different ability groups. Group sizes of 4 to 8 pupils are the recommended sizes for pursuit of cooperative and collaborative tasks (Slavin, 1990) with these tasks involving enrichment and incremental learning. Whole class instruction does not guarantee that pupils will actively participate in a learning task but is necessary for revision and practice. Learning tasks should be set at the appropriate level to encourage group working. Tasks that are too low or too high of a cognitive level will discourage pupil participation (Bossert, Barnett and Filby, 1985). PLAP recommends breaking down a task into components for mastery learning while Tolmie et al (1998) view it for planning, brain storming and forming consensus that will facilitate group working. If tasks are not broken down into components pupils will lose interest and direction. In general teachers need training in group working skills.

FURTHER RESEARCH

Further research on teachers' perceptions of PLAP at both primary and secondary level is necessary in order to take into cognizance their views. Trends in ability grouping in different school settings and their effects on performance need to be determined. The relationship between group size and pupil achievement is important to determine pupil achievement levels.

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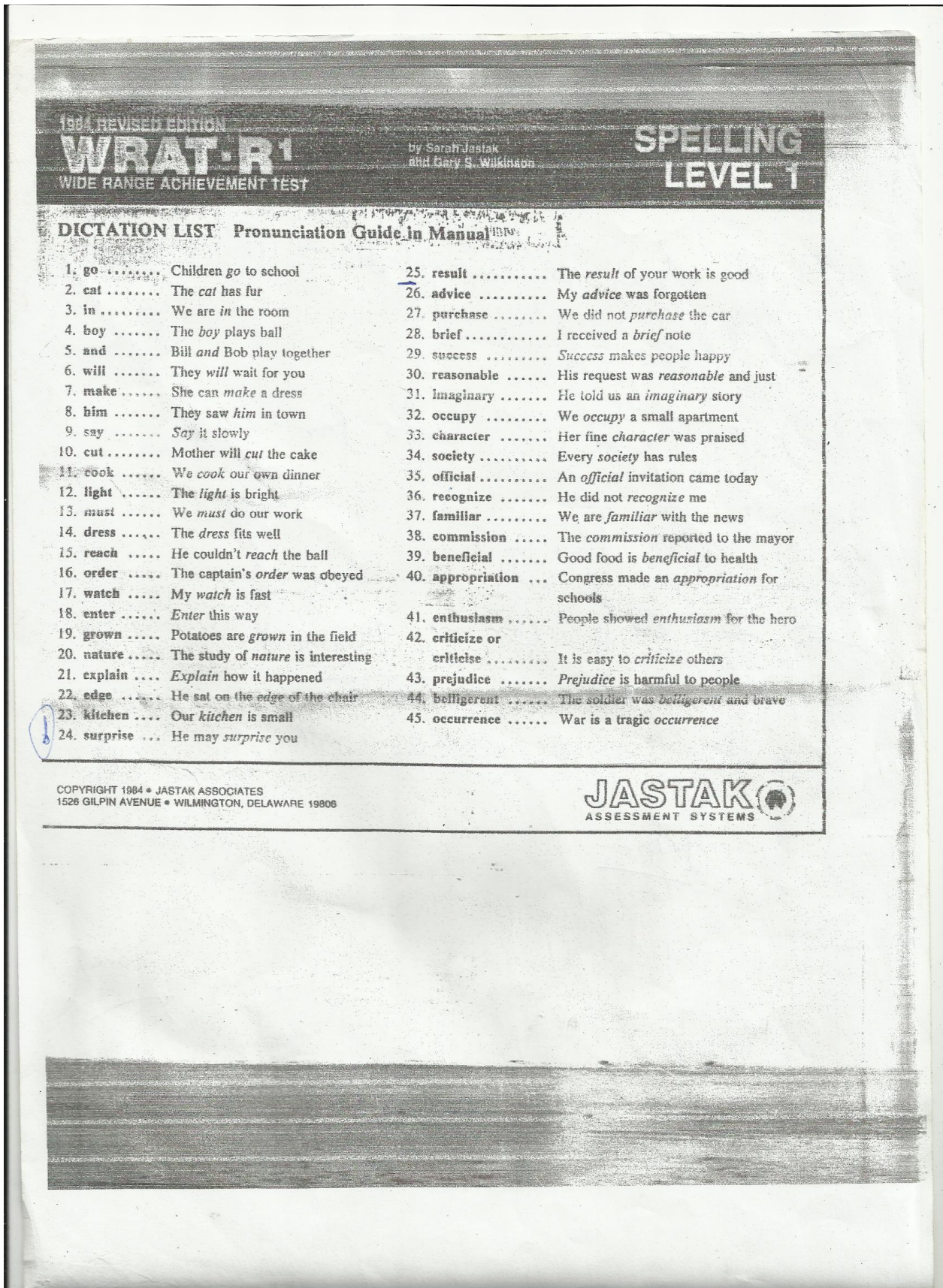
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Appendix 1 Wrat L1 spelling test

IJSRC



Conversion of test scores to grade equivalent

Raw score	1-21	22-23	24-26	27-29	30-32	33-34	35-37	38-39
Grade equivalent	Pre-first	1B	1M	1E	2B	2M	2E	3B
Grade in terms	Pre-first	Grade 1 first term	Grade 1 second term	Grade 1 third term	Grade 2 first term	Grade 2 second term	Grade 2 third term	Grade 3 first term

40-41	42	43-44	45	46-47	48	49-50
3E	4B	4E	5B	5E	6B	6E
Grade 3 third term	Grade 4 first term	Grade 4 third term	Grade 5 first term	Grade 5 third term	Grade 6 first term	Grade 6 third term

51	52-53
7B	7E
Grade 7 first term	Grade 7 third term

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