First and Second Language Reading Proficiency of Year 3, 4 and 6 Children in Malawi and Zambia¹

Eddie Williams

Centre for Applied Language Studies, Reading University

This paper reports on an investigation into L1 and L2 reading proficiency in two sub-Saharan African countries, Malawi and Zambia. In Malawi, Chichewa (the L1 in the schools investigated) is the medium of instruction for the first 4 years, with English as a subject. In Zambia, English is used as the medium of instruction from day 1, with the L1 (Nyanja in the schools tested) taught as a subject. Modified cloze tests in English and L1 were administered to over 450 pupils in each country. The results yielded large and statistically significant differences in favour of Malawi for reading proficiency in L1. The results of the English reading tests showed no significant difference between Malawian and Zambian pupils. Furthermore, in both countries the English results are low, suggesting that the majority of pupils cannot learn through English, as they are meant to be doing. The fact that Malawians outperform Zambians in the L1, while Zambians do not outperform Malawians in the L2 is attributed to the predominant "look and say" methodology in both countries. Whereas repetition in L1 is meaningful and can lead to learning, repetition in a language which is not understood is unlikely to do so.

INTRODUCTION

Reading in L1 and L2

Most research into acquisition and instruction in initial reading has been carried out for learners' first language. In the second language area "the teaching of reading" has generally referred to attempts to enhance the reading capacities of those who can already read, and research is generally at the intermediate level or above (Alderson & Urquhart, 1984; Carrell, Devine & Eskey, 1988). The early stage of reading in EFL/ESL is a relatively unresearched area and there remains, as Bialystok (1994) points out, much field research to be done. Exceptions to this general neglect are Kawtb (1981), Hudelson (1981) and Wallace (1988). This paper reports on the results of tests of reading proficiency in second language (English) and first language (Nyanja and Chichewa) in primary schools in two sub-Saharan African countries, Zambia and Malawi.

Reading

Reading is here taken to refer to the perceiving and understanding of written language. It would be distracting at this point to attempt to define reading in detail. Nonetheless, any consideration of reading may usefully distinguish the following three aspects: prerequisites to reading, processes of reading, and the product of reading.

Eddie WILLIAMS works at the Centre for Applied Language Studies in the University of Reading. He is the author of Reading in the Language Classroom, as well as a number of articles on EFL reading. For the last few years, he has been engaged in research into reading in southern Africa. He may be contacted at CALS, University of Reading, Whiteknights, Reading, UK.

Prerequisites: necessary, but not sufficient, prerequisites to any reading performance are that the reader should possess appropriate orthographic and linguistic knowledge (cf Thompson et al, 1993: 7). If readers have zero knowledge either of the language they are reading, or of the orthographic conventions of that language, they will not be able to read.

Processes: current psycholinguistic models of the reading process (in L1 and L2) see it as an interactive process where the reader is continually inferencing, prompted by the text and enabled by linguistic, orthographic and background knowledge. Schema theory, now widely disseminated, has drawn attention to the role of background knowledge in reading, and although the theory has been subjected to criticism for not being a rigorously articulated "theory" (Beech & Colley, 1987; 5), research amply documents the effects of background knowledge (eg Alderson & Urquhart, 1988; Steffensen & Joag Dev. 1984).

Product: the product of reading is comprehension, in other words, the understanding that the reader has generated. The nature of the reader's understanding is contentious. Williams (1986) posits the writer's intention as an "ideal" understanding, whereas Urquhart (1987), adopts a more "reader centred" view, where the writer's intention has no special status. The debate over understanding is important in the testing of reading where items are generally marked as right or wrong on the basis of a supposedly objective view of the text.

Investigations into reading process and product may focus on the "lower" level or the "higher". The lower level is primarily concerned with recognising orthographic words, identifying syntactic structures, and generating propositional units, whereas the higher level is concerned with relating multiple propositions and integrating textual information with existing personal schemata (cf Segalowitz et al, 1991: 17). The focus of the present investigation is "reading product" at the lower level. In very crude terms, the question being asked is "To what extent can the pupils read these texts?" rather than "What interpretations do the pupils have of these texts?"

PRIMARY EDUCATION IN ZAMBIA AND MALAWI3

Zambia

Pupils officially start school at age 7, and follow a seven year primary course. Schools for the most part are in poor condition, with few desks, and a severe shortage of books, especially in rural schools. Classes in urban areas average around 50, but are smaller in rural areas. About 15% of teachers are untrained. English is the official language of government and legislation. It is also (in principle) the language of instruction from year 1 for all school subjects apart from spiritual instruction and teaching the local language itself. In practice it seems that little importance is accorded to teaching local languages largely because they do not contribute to

secondary selection (Ministry of Education, Zambia, 1992: para 6.10). The "local language" is one of the seven Zambian languages officially designated for use in education; there are reported to be seventy-three indigenous languages/language varieties in Zambia (Kashoki, 1978: 9).

Malawi

Pupils start school at age 6, and follow an eight year primary course. Schools are for the most part in very poor condition, with little furniture and almost no material. Classes are enormous, especially in urban areas, where over 100 pupils are frequent. Some 10% of teachers are untrained (Ministry of Education, Malawi, 1989). The official languages of the country are Chichewa and English. The language of instruction for the first four years is Chichewa, with English as a subject (for some 3 hours a week); for the last four years English becomes the language of instruction with Chichewa as a subject. There are said to be 35 language varieties in Malawi with Chichewa estimated to be spoken by 27% of the population as a first language, and by a further 53% as a second language (Sichinga, 1994).

AIM OF THE PAPER

The aim of this paper is to report on an investigation into the reading proficiency of primary school children at years 3, 4 and 6 in Malawi and Zambia in English and in the local language. Two hypotheses are related to this aim:

Hypothesis 1: children in Malawi will have superior reading ability in the local language to children in Zambia at years 3, 4 and 6 (ie that Malawian children will read better in Chichewa than Zambian children will read in Nyanja).

Hypothesis 2: there will be no difference in reading ability in English between children in Zambia and children in Malawi at years 3, 4 and 6 of primary schools (ie that Zambian children who have the first four years of education through the medium of English will not be superior to Malawi children who have had Chichewa as a medium of instruction for those years).

Since all children in Zambia, and those in Malawi from year 5 onwards, are educated through the medium of English, and are supposed to learn through reading in English, an attempt has also been made to interpret the English test scores in terms of what they indicate about the children's ability to read course books at their level.

TEST INSTRUMENTS AND DATA STRUCTURE

Tests

Test formats which were piloted for this investigation included open comprehension questions, and standard nth word cloze. They were rejected since it was felt that the pupils' low productive capacity misrepresented their comprehension. The format

finally selected was a modified cloze in which deletions were manipulated so as to produce about 75 % of lexical items. The correct answers were provided in jumbled order in a box above each section, as illustrated in this example:

Maseko and his Bicycle

going	him	road	bark	one	sugar
s assistant (XC	Laggera	erior de poste	nachu ni	dinipon	a sucations
Maseko is	riding his	bicycle a	along the	entino sopi	He is
i osti atri	to the	e store to	buy some	ro ak tro iunoo as	There
is a dog on the road outside					the houses.

Figure 1: Extract from English reading test, for year 3.

The box also contained an extra 50% of incorrect options, so that the last item could not be completed by elimination. This format seemed to be the one that did least violence to the process of reading, could be administered to a group, and was familiar to children from similar tests used by teachers in both Zambia and Malawi. Pilot testing suggested that there were great differences within each year in both countries, with some year 3 pupils scoring far higher than some year 6 pupils. It was therefore decided to construct a 60 item test consisting of three 20 item subtests, with items 1 - 20 aimed at year 3, items 21 - 40 at year 4, and items 41 - 60 at year 6. All pupils, however, would be asked to attempt all subtests; thus weak year 6 pupils and strong year 3 pupils were able to demonstrate their proficiency irrespective of the point they were assumed to have reached in the English curriculum. The language for each subtest was taken from material in the appropriate course books (English in Malawi and New Zambia Primary Course). As these have a large amount of language in common it was possible to construct one English test for both countries.

In order to investigate the pupils' proficiency in the local language, a similar test format was employed, and two 60 item modified cloze tests were produced, one in Chichewa (for Malawi), and one in Nyanja (for Zambia). There is of course, no way of ensuring that these two tests are of identical difficulty (but see section 8 below). The tests were administered in areas where these languages were known to be the home language of most pupils (home language was also reported on the test paper).

Data Structure

In both countries two urban schools and three rural schools were selected. The restricted nature of the sample (due to constraints of time and money) means that this work is a survey of selected schools, rather than a random sample. The generalisations made are accordingly logical, rather than statistical (Kamil, Langer and Shanahan, 1985: 53).

Tests were administered to intact classes in cases where classes had fewer than 34 pupils. In cases of larger classes a representative sample with approximately equal numbers of boys and girls was selected. Data was collected from the following numbers of pupils:

Yr	Sex	Urban	Rural	Total
3	Boys Girls	38 41	45 45	83 86
4 4	Boys Girls	34 35	42 42	76 77
6	Boys Girls	43	49 27	92 66
Total		230	250	480

Table 1: Data Structure for Malawi

Year	Sex	Urban	Rural	Total
3	Boys	27	40	67
	Girls	41	43	84
4	Boys	29	49	78
	Girls	39	31	70
6	Boys	33	46	79
	Girls	27	47	74
Total		196	256	452

Table 2: Data Structure for Zambia

English Test Results

The results are presented here by year. A more detailed breakdown by school, by year and by sex appears in the appendix. The reliability estimate for the English test was 0. 86 (Kuder Richardson 21).

Table 3: Malawi, Results for English Reading Test, Items 1-60

It is apparent from comparing maximum (MAX) and minimum (MIN) scores that there is considerable range of score within each year, with an overlap between year 3 and year 6. The detailed results reveal that this is true for all schools, although urban schools have higher maximum scores. Despite this overlapping, there are large mean differences between years (year 6 score approximately 14 points higher than year 4, who in turn score some 7 points higher than year 3). These differences are statistically strongly significant (p < 0.0001). Such results suggest that pupils are improving the longer they stay in school.

YEAR	N	MEAN	MEAN SD		MIN MEDIAN			
3	151	4.97	7.43	43	0		2	
4	148	11.43	10.60	53	0		8	
6	153	28.10	13.82	60	1		29	

Table 4: Zambia, Results for English Reading Test, Items 1-60

As in the case of Malawi there is an overlap between scores, and again there are large and statistically significant differences between years, with year 6 scoring an estimated 16.8 points higher than year 4, who in turn score 6.6 higher than year 3.

GENERAL COMMENTS ON ENGLISH TEST RESULTS

The MIXED programme in the SAS package yields an overall inter-country difference of 2.63 points in favour of Malawi. This figure, however, is far from significant (P > 0.4) and there is thus no evidence of real difference between the two countries. Hypothesis 2 is therefore supported. However, as is often the case in cross-country comparison, differences in the educational systems in the two countries mean that this finding has to be interpreted with some reservations. Two factors favour Malawi: first, Malawi has a policy of promotion from one year to the next through an end of year examination as opposed to automatic transfer in Zambia. However, this policy is not uniformly applied across Malawi, and is claimed by some to be an unreliably operated way of controlling class size. Second, the tests in both countries were carried out in May at a time when Malawi (with the school year running from September to August) was approaching the end of the year, whereas Zambia (school year January to December) was only about half way

through. On the other hand class size in Malawi was far greater than in Zambia (mean of 99.3 as opposed to 48.3 in the schools where testing took place).

The only statistically significant sex differences were those between the English scores of boys and girls in Malawi where the former scored 1.95 points more than the latter. In Zambia girls scored a non-significant 1.2 points more than boys. These differences may be related to the fact that girls are less likely to have books than boys in Malawi, and also more likely to be kept at home to care for younger siblings. The unfavourable attitude to the education of girls is present, but to a lesser degree in Zambia, as is reflected in school enrolments: in 1990 girls were about 45% of the primary school population in Malawi (Ministry of Education: 1991) and about 48% in Zambia (Ministry of Education: 1992).

Urban-rural differences in both Malawi and Zambia are large (3.3 and 7.2 in favour of urban pupils respectively) but non-significant, due to the small number of schools (not pupils) in the sample. It highly likely that real differences exist between urban and rural schools, but a larger sample of schools would be needed to confirm this.

RESULTS OF LOCAL LANGUAGE READING TESTS

Obviously no claim can be made on the relative facility of the local language test and the English test. More seriously, it cannot be demonstrated that the two local language tests are of equivalent difficulty. However, as Chichewa and Nyanja are "the same language" (Kashoki, 1978: 45) with a few orthographic differences, then subjective assessments of the two tests can be carried out by educated native speakers⁴. In this case four teacher trainers (two from each country) judged the tests to be of equal difficulty. Judgement was facilitated by the fact that both tests were translated versions of the same English original.

YEAR	N	MEAN	SD	MAX	MIN	MEDIAN	
3	169	16.11	8.48	43	1	15	
4	153	29.14	10.36	52	7	29	
6	158	45.66	8.29	59	22	47	

Table 5: Results of Chichewa Reading Test (Malawi)

Results of the Malawian pupils generally indicate scores well above the chance score of 8 (Department of Applied Statistics, Reading University) by most pupils in Years 3 and 4 on the first two subtests, while in Year 6 the vast majority have scored over 50% on the test as a whole.

Product moment correlations between the English results and the Chichewa results for all years are generally positive but not high. Those for Year 6 (by school) are as follows:

```
School M (urban): 0.56 (p<0.0001)
School S (urban): 0.40 (p<0.0110)
                 : 0.42 (p<0.0368)
School N rural)
                 : 0.40 (p<0.0191)
School P (rural)
School W (rural) : 0.73 (p<0.0022)
```

This suggests a slight tendency for performance in English to correlate with that in Chichewa. Certainly it does not suggest that competence in English is acquired at the cost of competence in Chichewa.

YEAR	N	MEAN	SD	MAX	MEDIAN	MIN
3	151	3.31	4.44	37	2	0
4	148	7.50	5.06	27	7	0
6	153	21.63	12.17	58	20	3

Table 6: Results of Nyanja Reading Test (Zambia)

These scores are considerably lower than those achieved by the pupils in Malawi. especially in years 3 and 4, while the mean score in Malawi at year 6 is more than double that in Zambia. These results suggest that most Zambian children appear to have considerable reading problems in reading their local language. For year 6, Spearman rank order correlations of results in English and Nyanja yielded the following:

School C (rural): 0.82467 (p<0.0001) School D (rural): 0.73068 (p<0.0001) School K (rural): 0.77876 (p<0.0001) School J (urban): 0.56686 (p<0.0011) School T (urban): 0.67354 (p<0.0001)

These high correlations, especially for rural schools, suggests that pupils who score relatively well in English score relatively well in Nyanja and vice versa. Again it does not support the view that reading proficiency in one language is gained at the expense of reading proficiency in another.

CONCLUSION

Differential Proficiencies

The conclusion appears to be that children in Malawi have benefitted from instruction through the medium of the local language in that they display higher reading proficiency in it, than do Zambian children in a comparable test. The differences are large and statistically significant, and Hypothesis 1 (subject to the comparability proviso) is supported: Malawian children read better in their local language than Zambian children read in theirs (this result is supported by Williams (forthcoming) which reports the same Zambian Nyanja test given to Malawian and Zambian pupils with similar superior results on the part of Malawian pupils). These results are in line with Verhoeven (1991) who found (working with Turkish L1 pupils in the Netherlands) that 'a strong emphasis on instruction in L1 does lead to better literacy results in L1 with no retardation of literacy results in L2' (1991: 72). One result of the use of Chichewa as a vehicular language is that Malawian pupils are accustomed to seeing it in written form and are likely to have more rapid sight recognition of the written words. Zambian pupils on the other hand rarely see their language in written form. Although no causal link can be demonstrated, it is highly likely that the Malawian superiority in the local language results from its use as a medium of instruction in Malawi, and the virtual absence of the local language as a medium of instruction in Zambia.

If this is the case, then we might ask why Zambian children have not shown significant superiority in English, since one might expect them to benefit from having had it as a medium of instruction. The answer to these differential proficiencies is probably to do with the dominant pedagogic practices in both countries. Classroom observation (15 in Malawi, 13 in Zambia) suggests that the majority of teachers relied heavily on the 'look and say' (whole word and whole sentence) approach, with almost no attention to the presentation or checking of meaning. The result of this is a 'reading-like' activity where successful performance is indistinguishable from 'real' reading aloud. Williams (1993: 11) reports a lesson where a child who recalled a sentence while looking at the ceiling was admonished by the teacher with: 'When you say it, you have to look at the words. That is what reading is.' Furthermore, teachers in interviews consistently report 'correct pronunciation' as a major reading problem, while rarely mentioning meaning. The pupils therefore spend a great deal of time repeating aloud what they do not understand. Automatization of reading skill does not result from repetition alone. Segalowitz et al claim that 'the issue will be how consistently and frequently a given meaning representation is associated with its graphemic representation by the language user' (1991: 22, my italics). There is a clear danger that reliance on 'look and say' methods in L2 situations where children have limited competence in that L2 can result in pupils simply vocalising in response to a written pattern.

The Implications of English Test Results for Learning

Because no standardised reading tests were available in either country, there is a problem in interpreting these results in terms of the pupils' probable comprehension of other school texts. However, bearing in mind that the three 20 item subtests are aimed at three different years (3, 4 and 6) and that each subtest is based on the language from English course books of the years below, it may be permissible to make a cautious negative claim that a score of 7 or less out of 20 items in a subtest would indicate inadequate reading comprehension on that subtest (without implying that a score immediately above 7 indicates adequate comprehension). The tests were examined by urban and rural class teachers (19 in Malawi; 11 in Zambia) who in every case estimated that the average pupil would score at least 15 out of 20 on the subtest for their year (while these predictions do not establish a relationship between score and comprehension, they indicate that teachers felt the test content was within the capabilities of the average child). The percentages of pupils scoring 7 or less out of 20 on their subtest were as follows:

Year	Subtest 1 Items 1-20	Subtest 2 Items 21-40	Subtest 3 Items 41-60		
3	65	99	100		
4	40	89	100		
6	1	36	78		

Table 7: Percentage of Testees at each year scoring 7 or less for each subtest (Malawi),

Year	Subtest 1 Items 1-20	Subtest 2 Items 21-40	Subtest 3 Items 41-60		
3	89	97	100		
4	70	88	95		
6	33	43	74		

Table 8: Percentage of Testees at each year scoring 7 or less for each subtest (Zambia)

In both countries it is difficult to see how the majority of year 6 pupils could learn through reading in English in their other subjects, as they are meant to be doing. This is supported by a recent Zambian Ministry of Education report (*Focus on Learning*, 1993: para 5.4) which claims that "Too early an emphasis on learning through English means that the majority of children form hazy and indistinct concepts in language, mathematics, science and social studies". I am not aware of work on conceptual clarity carried out among Malawian primary schoolchildren, but the scores on the year 6 subtest would suggest that most have not yet attained a threshold of competence in English where they are in a position to learn through it (cf Cummins & Swain, 1986: 18).

Previous research in Zambia has come up with similar findings. Sharma (1973) administered a 40 word recognition test in English to 3,298 grade 3 children (a 5% sample). The words were drawn from Zambian coursebooks at years 1, 2 and 3. Only 4.15 % could read all the words correctly, while 5.36% could not read a single word. Only 17% of these year 3 children managed to read all the year 1 words correctly, while only 7.2% could read all year 1 and 2 words correctly.

Chikalanga (1990: 69) reporting a 1973 study in Kitwe Teachers' College, which tested 583 grade 5 children, concluded that "there is a large group of very poor readers in most classes and they are unlikely to be able to cope with the English course of the *New Zambia Primary Course* nor be able to do much of the work in other subjects".

However, not only are children likely to have learning problems resulting from instruction in a language which they do not understand. A further result of such instruction is the enormous waste of time and money for both teachers and pupils, in countries which can ill afford waste. Issues of language in education are of course notoriously difficult in many African countries, with educational views frequently in conflict with political aspirations (cf Akinnaso, 1994: 159). Solutions are likely to be slow and partial, but should nonetheless be urgently pursued. At present, although a small minority of pupils appear to survive and learn, there is for the majority a real danger that current language practices within Malawian and Zambian primary schools may be stultifying, rather than enlightening them.

NOTES

- The research upon which this report is based was funded by the UK Overseas Development Administration. I am grateful to the ODA and also to all officials of the Ministries of Education in Malawi and Zambia, as well as to the teachers and pupils who cooperated so readily.
- Such an accusation seems almost churlish, since "theory" is now often used in the vague sense of "idea" or "principles".
- The situation described here is that obtaining in May, 1994.
- Chichewa is the language of the majority Chewa people in Malawi; the Chewa people also extend into Zambia where Chewa is an important lingua franca, generally known as Nyanja.

REFERENCES

- Akinasso, F. N. (1994) Linguistic unification and language rights. *Applied Linguistics* 15/2: 139-168.
- Alderson, J. C. and A. H. Urquhart (eds.) (1984) Reading in a foreign language. London: Longman.
- Alderson, J. C. and A. H. Urquhart (1988) This test is unfair: I'm not an economist. In Carrell, Devine & Eskey (eds.)
- Beech, J. and Colley, A. (1987) *Cognitive approaches to reading*. Chichester: John Wiley and Sons.
- Bialystok, E. (1994) Review article (Gough, P. B., L. C. Ehri and R. Trieman (eds.) 1992. Reading Acquisition). Applied Linguistics 15/2: 224-225.

- Carrell, P. L., Devine, J. and D. E. Eskey (eds) (1988) *Interactive approaches to second language reading*. Cambridge: Cambridge University Press.
- Chikalanga, I. W. (1990) Inferencing in the reading process. Unpublished PhD Thesis, Reading University.
- Cummins, J. and M. Swain (1986) Bilingualism in Education. London: Longman.
- English in Malawi: Books 1 8 (1965-1968) Blantyre, Malawi: Dzuka Publishing/ Longman Malawi.
- Hudelson, S. (ed.) (1981) Learning to read in different languages. Washington, D.C.: Center for Applied Linguistics.
- Hulstijn, J. H. and J. F. Matter (eds.) (1991) Reading in Two Languages. Amsterdam: AILA Review 8.
- Kamil, M. L., J. A. Langer and T. Shanahan (1991) *Understanding Research in Reading and Writing*. Boston: Allyn and Bacon.
- Kashoki, M. E. (1978) The language situation in Zambia. In Ohannessian, S. and M. E. Kashoki (eds.)
- Kawtb, K. I. (1981) Teaching beginning reading to students of EFL in Egypt. Unpublished PhD, University of Pittsburgh.
- Ministry of Education [Malawi] (1991) *Education Statistics*. Lilongwe: Ministry of Education.
- Ministry of Education [Zambia] (1992) Focus on Learning. Lusaka: Ministry of Education.
- New Zambia Primary Course, English Language. (1968-1971) Lusaka: Ministry of Education.
- Ohannessian, S. and M. E. Kashoki (eds.) (1978) Language in Zambia. London: International African Institute.
- Segalowitz, N., C. Poulsen and M. Komoda (1991) Lower level components of reading skill in higher level bilinguals: implications for reading instruction. In Hulstijn, J. H. and J. F. Matter (eds.)
- Serpell, R. (1978) Some Developments in Zambia since 1971. In Ohannessian and Kashoki (eds.)
- Sharma, R. (1973) The reading skills of grade 3 children. (mimeo) Psychological Service Report 2/1973. Lusaka: Ministry of Education.

- Sichinga, W. K. (1994) Language Statistics in Malawi. Unpublished mimeo: Zomba: Office of Statistics.
- Steffensen, M. S. and C. Joag Dev (1984) Cultural knowledge and reading. In Alderson and Urquhart (eds.)
- Thompson, G. B., W. E. Tunmer and T. Nicholson (1993) Reading acquisition processes. Clevedon: Multilingual Matters.
- Urquhart, A. H. (1987) Comprehensions and interpretations. Reading in a Foreign Language, 3, 2.
- Verhoeven, L. (1991) Acquisition of biliteracy. In Hulstijn, J. H. and J. F. Matter. (eds.)
- Wallace, C. (1988) Learning to read in a multicultural society. London: Prentice Hall.
- Williams, E. (1986) Review article (Alderson, J. C. and A. H. Urquhart (eds.) Reading in a foreign language). English Language Teaching Journal, 40, 1.
- Williams, E. (1993) Report on Reading in English in Primary Schools in Zambia. London: Overseas Development Administration.
- Williams, E. (forthcoming, 1995) Reading in two languages at year 5 in Malawi and Zambia. In Greenhalgh, S. et al (eds.) *Proceedings of the 1994 regional teacher training conference*. Harare: University of Zimbabwe.

APPENDIX: RESULTS OF ENGLISH TESTS BY SCHOOL, SEX AND YEAR

Malawi (Schools M and S are urban; others rural. Maximum possible score 60.)

YEAR	SCHOOL	SEX	N	MEAN	SD	MAX	MIN	MEDIAN
3	M	В	18	11.1111	6.6323	23	2	11.0
3	M	G	21	9.7619	5.3470	25	2 2	9.0
3	N	В	17	6.5882	2.9381	12	2	7.0
3	N	G	17	3.6471	1.6934	7	1	4.0
3	P	В	17	9.2353	3.6147	15	2	10.0
3	P	G	17	6.1765	2.3247	11	3	6.0
3	S	В	20	6.5500	4.1482	17	1	5.5
3	S	G	20	6.1000	4.7005	21	0	5.0
3	W	В	11	9 . 4545	2.8762	14	4	10.0
3	W	G	11	8.0909	2.5867	12	3	7.0
4	M	В	20	19.3500	7.7682	35	7	19.0
4	M	G	19	22.4737	7.5672	37	9	22.0
4	N	В	16	7.5000	4.1473	18	2	6.5
4	N	G	19	7.0526	2.1467	11	3	7.0
4	P	В	16	18.1250	7.6059	39	8	17.5
4	P	G	13	15.3846	6.9706	29	7	16.0
4	S	В	14	13.5714	6.3575	24	5	14.0
4	S	G	16	15.5625	5.5132	27	8	14.0
4	W	В	10	18.5000	6.6542	28	6	18.0
4	W	G	10	10.7000	2.7508	15	6	11.0
6	M	В	21	32.6667	8.9852	53	17	31.0
6	M	G	21	32.6667	9.0848	51	19	30.0
6	N	В	14	19.2143	7.9921	36	11	16.0
6	N	G	11	23.2727	7.3088	42	14	22.0
6	P	В	22	29.1818	10.2569	54	12	26.5
6	P	G	13	23.6923	5.7791	34	16	23.0
6	S	В	22	32.5000	6.6744	47	17	32.0
6	S	G	18	26.8333	6.4830	40	17	27.5
6	W	В	13	39.3077	9.1596	53	25	44.0
6	W	G	3	17.6667	9.0738	26	8	19.0

Zambia: (Schools J and T are urban; others rural. Maximum possible score 60)

Lamo								
YEAR	SCHOOL	SEX	N	MEAN	SD	MAX	MEDIAN	MIN
3	C	В	17	2.1176	2.3152	7	1.0	0
3	C	G	22	2.2727	2.0972	7	2.0	0
3	D	В	6	2.8333	2.4833	6	1.5	1
3	D	G	4	2.7500	2.6300	5	3.0	0
3	J	В	13	11.5385	10.3006	36	7.0	1
3	J	G	22	15.0909	11.3847	43	11.0	2
3	K	В	17	3.3529	3.3901	11	2.0	0
3	K	G	17	3.8824	2.3686	9	4.0	1
3	T	В	14	0.5714	0.8516	2	0.0	0
3	T	G	19	1. 2632	0.8719	3	1.0	0
4	C	В	24	7.8750	3.5912	14	8.5	1
4	С	G	13	6.4615	3.4306	13	6.0	2
4	D	В	8	11.0000	8.2635	26	11.0	1
4	D	G	10	3.7000	3.6833	10	2.0	0
4	J	В	17	16.2353	12.4976	40	10.0	3
4	J	G	17	27.2941	17.3016	53	29.0	5
4	K	В	17	12.6471	8.1236	28	9.0	2
4	K	G	8	9.7500	5.1478	22	8.0	6
4	T	В	12	7.8333	4.2391	16	7.0	2
4	T	G	22	7.5455	3.8635	16	7.0	2
6	С	В	12	13.5833	9.7743	31	10.0	1
6	C	G	12	24.1667	8.4297	41	24.5	14
6	D	В	16	24.6875	12.1914	46	26.5	8
6	D	G	20	25.6000	9.7030	39	27.5	4
6	J	В	15	43.9333	11.0290	55	6.0	11
6	J	G	15	46.8000	7.0933	57	47.0	29
6	K	В	18	28.3333	5.6672	38	29.0	15
6	K	G	5	22.7333	10.4092	48	22.0	5
6	T	В	18	23.1667	5.6478	60	22.0	3
6	T	G	12	25.8333	11.9608	48	25.5	9