CHAPTER FIVE: DISCUSSION OF FIDINGS

5.1 Preview

This chapter discusses the results according to the themes of the study and these are; the views of school headteachers, science heads of departments and education standards officers towards teaching and learning of O-level Physics. How education administrators perceive the decrease in the number in the number of centres offering O-level Physics, the views of education administrators on the poor performance of O-level Physics at Grade 12 final examinations and the support education administrators render towards teaching and learning of O-level Physics.

5.2 Discussion

From the results, it can be clearly seen that education administrators perceived the teaching and learning of O-level Physics had small differences among schools. The majority believed that O-level Physics was not popular to students in high schools and therefore there was no need to make it compulsory. This perception has trickled down even to students as it can be clearly seen in the number of pupils opting to sit for O-level Physics at Grade 12 final examinations. This argument is popular in schools among students.

The findings agree with findings of Roger (1996) who found that the dominant public perception of Physics is that it is tedious, abstract and fundamentally irrelevant. He further said that the challenge is to convince the audience that Physics is rewarding, fun, useful and most of all a worthwhile endeavor. The findings are also consistent with the finding of Manjula, Millar and Wilson (2006) who found that most students have a negative perception about Physics. In addition, they found in their study that (42%) of students surveyed perceive that their Physics background is nil.

However, this can be seen from the respondents' subjects of specialization. Only four (4.3%) out of ninety-four respondents had specialized in Physics education and this has an inclination on their perception towards the teaching and learning of O-lever Physics in schools. The majority (47.9%) respondents were trained to teach other subjects such as History, Home Economics and English Language. In addition, the respondents' geographical location, that is, along the line of rail did not help them to relate the teaching and learning of O-lever Physics to industry. The findings also revealed that (49%) of the respondents were holders of diploma. This was clearly evident with the claim which (90%) of headteachers made .They clearly stated that O-level Physics concepts were not easy to understand.

Similarly, Freedman (1996) noted that every Physics instructor has heard this complaint from students at one time or another that; *I can do (some of) the problems, I just don't understand the concepts.* The stigma of the subject by the school could emanate from the headteachers perception about the subject. As Kocher (2006) observes; in the school administration, the principal (headteachers) occupies a unique position. He is a strategic centre of a web of instructional relationships teacher-pupil, teacher-parent and teacher-teacher. This lamentation is consistent with Higgin (2007) that the quality of education will not improve as long as teachers, schools and system management were not strengthened.

The findings also revealed that there were very few quality O-level Physics textbooks in high schools. Education administrators indicated that O-level Physics textbooks could not be procured as they were not readily available on the market. It was for this reason that (60%) of headteachers observed that O-level Physics was shunned in high schools due to lack of quality textbooks. When headteachers were asked about the procurement policy in their schools, many diverse responses were presented. For example, one school pointed out that Physics textbooks were procured whenever funds were available and according to the needs. In the same vein, another school indicated, "due to insufficient funds, the school had to prioritize its needs". Furthermore, one other school argued that there was

no need for them to have a procurement policy since the funds were not adequate enough to buy quality textbooks.

The study shows that 37.5% of high schools visited did not plan and prioritize for termly or yearly procurement of materials/ equipment. Alarmingly, ten (100%) of the education standards officers who participated in the study disagreed with the statement that Physics textbooks and apparatus were bought every term. The researcher felt that lack of textbooks/ apparatus had an adverse effect on the performance of pupils in Physics. In his research, Maqutu (2002) reported that achievement of students was affected directly by the availability of textbooks in schools. The high quality textbook was the single most influential factor in the classroom. It was the researcher's conviction that textbooks written by local writers were going to benefit a lot of learners because the language and illustrations would be familiar to their environment.

However, it was found that 80% of education standards officers indicated that less than 40% of high schools procured textbooks because they were expensive and they were not available in all the book shops. Basically, good quality text books were found in urban areas and of course, children coming from wealthy families had access to them. Ministry of Education (2008) sets the standards that, each pupil should have a textbook to himself/ herself but a ratio of two pupils to one textbook is good enough for effective learning to take place. Admittedly, quality textbooks for O-level Physics are not adequately supplied. Moreover, those that are in book shops are above what ordinary pupils from humble families can afford. Public libraries also do not stock useful O-level Physics textbooks which pupils can borrow to enhance their studies.

Similarly, the findings were consistent with the findings of Ndashye (2007) who found in his study that the prime reason for lack of success in O-level Physics examinations were shortage in Physics textbooks. The finding also agree with the findings of Kostyuk (2006) who found that as a result of lack of quality textbooks, pupils spend most time copying notes, that is, teachers give more factual information than encouraging problem solving and higher level cognitive activities.

It is in this line that Fuller (1985) admonishes education administrators that a good deal of evidence now suggests that material factors in schools, such as textbooks or writing materials have more influence on teaching and learning achievement. The findings reveal that many headteachers have acknowledged that O-level Physics is taught in abstract due to lack of equipment/ apparatus in many high schools. This situation normally would affect the quality of teaching and learning. It means that pupils would not get involved in practical work but learn concepts in abstract.

Highlighting the importance of practical work due to availability of equipment and apparatus, Parkinson (1998: 104) observes that practical work:

- motivates pupils to do science and helps to keep them interested
- teaches skills to pupils
- helps to promote logical thinking
- helps pupils to understand concepts
- provides an opportunity for pupils to develop communication skills and to learn through group discussion and
- provides an opportunity for pupils to work together as part of a team.

This finding agrees with the findings of Muchelemba (2001) who found that the availability of resources in schools may motivate teachers to work hard and improve the performance of pupils. The science heads of departments in the study lamented that lack of equipment and apparatus has contributed to apathy by most teachers in schools to conduct experiments and actually develop a belief that O-level Physics is not real but a subject confined in the classroom and for the few. However, the argument that was revealed was that many headteachers claimed that O-level Physics was very expensive to offer to many students. Some science heads of departments even said: *headteachers find it normal to spend a lot of money on sports other than buying equipment and apparatus for the department.*

The argument was verified by all the education standards officers during their school monitoring. This revelation has raised a lot of concern as observed by the Examination Council of Zambia (2009:67) in O-level Physics Practical Paper (5054/3): *Generally, the performance of pupils was very average, though the number of pupils sitting this paper is reducing. Therefore, I would urge the relevant authorities to encourage schools to increase on the number of pupils doing pure sciences* ... This basically depends on the perception of the education administrators towards the teaching and learning of O-level Physics. If they regard that O-level Physics is important in the development of any nation, then headteachers would find it fit to invest and spent money in buying equipment and pieces of apparatus.

Another argument put forward by Baggot et al (2004) is that there is a subject subculture as seen through the eyes of individual teachers. According to Goodson as found in Baggot et al (2004); *Subjects are well-established bodies of knowledge and social practices that carry with them particular assumptions about worthwhile knowledge, effective teaching, the good student and appropriate assessment.* From the study, some science heads of departments argued that lack of qualified teachers discouraged the administration to procure equipment and pieces of apparatus. Respondents from the study revealed that the performance of pupils in O-level Physics was not encouraging. This argument is in agreement with the finding by Examination Council of Zambia (2009:16); *Generally, some schools had very good results while others were below average. They appeared like there were no teachers or teachers failed to teach effectively. Whatever the case, we hope some improvements will be made in future.* The few schools which perform well are those schools which apply themselves fully and ensure that the teaching and learning environment is conducive and supportive.

Therefore, the production of quality results or improvement of performance in O-level Physics as urged by Examination Council of Zambia (2009) depends on the imputs into the high school system that would facilitate teaching and learning. There could be several needs as indicated by the views of heads of departments of science in the study such as:

- *Qualified Teacher Percentage*

- *Pupil/ Qualified Teacher Ratio*
- *Pupil/ Classroom Ratio*
- *Pupil/ Textbook Ratio and*
- *Pupil/ Desk Ratio.*

This argument has been highlighted by other findings such as Rivkin, Hamushek and Kain (1998) who found that the teacher quality is the most important determinant in school quality, also Nyagura (1991) who found that student achievement was higher when schools had a greater availability of textbooks, a larger proportion of trained teachers and teachers who had taught at that school a longer period of time.

Sauders and River (1996) in Maliwatu (2006) found that the single most important factor affecting student achievements are both addictive and cumulative. Although the Ministry of Education argues that: *Examination results have often been mistaken to measure quality which may not really be the case. Examinations do not provide information on quality outcomes of the educational system at any given time and also they do not tell the country how well the children are learning and what they understand and are able to do. Examinations only achieve to provide information on regional, district, school and pupil performance differentials. At best, examinations have only been used to select pupils for higher educational levels where places have been fewer owing to scarce resources.*

The study revealed that O-level Physics is allotted fewer periods in many high schools as indicated by the seventy-two headteachers. Instead of six periods per week, many schools have allocated only four periods for diverse reasons. Some headteachers argued that there are a lot of subjects which need space on the time-table and O-level Physics like any other subject needs to be squeezed. A finding by the Ministry of National Education (2007) is consistent with the revelation of the study: *The teaching load varies from area to area though teachers of the same academic qualification rank and length of experience receives the same salary.* However, the argument is whether the time allocated to O-level Physics is adequate to exhaust the syllabus and do enough practical work, is something which the education administrators should pay attention to. It is in this light that Kochhar

(2006) urges the headteachers that they can provide time and facilities for curriculum work in order to succeed in the teaching and learning of O-level Physics.

The argument on time allowance on the time-table in high schools is more difficult to solve especially if the headteachers and science heads of departments are not creative and level headed. On the other hand, the findings show that the few teachers of Physics who are available suffer low due to overload of teaching periods. This finding is in line with the finding of Kostyuk (2006) who found that lack of teachers of Physics in high schools has led to an overload of periods whereby teachers were teaching between 30 to 40 periods per week. This situation leads to stress and loss of morale in many teachers of Physics thus absenteeism is on the increase. Comparatively, the Ministry of National Education (2007) found that the teaching loads vary from area to area though teachers of the same academic qualification, rank and length of experiences receive the same salary. This has been a persistent problem related to the over-supply and under-supply of teachers along the history of education.

However, the education administrators have a bigger role to play in motivating the teachers who are overloaded depending on the way they perceive the teaching and learning of O-level Physics in the school. In the same vein, science heads of departments argued that if an incentive was given to the teachers of Physics, they would be motivated. This argument was supported by 71% of headteachers. Kundu and Tutoo (2008) found that incentives of all types may influence behaviour and motivate the person to work. A person may have abilities and those abilities may be employed as tools to fulfill their ambitions but incentives will determine the extent to which they get motivated to do the work. Incentives try to change the capacity of a person to work. By virtue of better incentives, the level and amount of effort in a person will increase or decrease. However, education administrators should take note that participation in work depends on the quality of incentives offered to a person.

Aa the science heads of departments observed, an incentive would encourage teachers of Physics to spend extra time in the laboratory to prepare and conduct experiments for the benefit of the school. Though the study reveals that many science teachers are sponsored to go and further their studies at the University, statistics show that there are few graduates in Physics education. Table 2.2 shows the trend which the researcher presumes has strengthened the stigma that Physics is a difficult subject or programme. The headteachers and heads of science departments argued that many teachers of science holding diplomas prefer to change the programmes once at the University.

On the other hand, it was argued that very few teachers were elevated or promoted to the post of headteachers or otherwise. Eight-eight percent of headteachers were of the view that it was not ease to promote a teacher of Physics as that would create a vacuum. In the same light, all the education standards officers supported the argument though, there was an overwhelming proposal from the science heads of departments that teachers of science and Physics in particular needed to be motivated in terms of promotion. In his study, Muwanga-Zake (2000) argued that there were relatively fewer science educators in administration and the absence from higher positions of science educators could imply that important policy decisions lacked professional input.

Similarly, Kostyuk (2004) found that Physics educators were scarce in the senior posts like directorship. In the Post (2009), Minister of Education- Dora Siliya indicated that there was need to invest in science and technology in order to accelerate growth and to strengthen the link between education and the world of work; the need for quality education to encourage critical thinking and more analytical thinking and enquiry attitude. From the aforesaid arguments, it is the researcher's conviction that considering teachers of science and Physics in particular into higher positions would contribute to foster development and change the perception towards the teaching and learning of pure sciences in high schools.

On the headteachers conducting meetings with the science departments, the results show that 67% of the headteachers had little contact with the members of science departments. They claimed that they met all members of staff in school during staff meetings and if they were to visit the science department, it was through the heads of science department or whenever there was a great need. In his study, Napoleon (2007) found that mentality controls, very largely, the space one occupies in life, the success one achieves and the contribution one makes to positivity. Kochhar (2006:143) clearly noted that: *For democratic administration of a school, it is necessary that members of staff occasionally meet to share responsibilities and experiences. (Faculty) meetings should be occasionally held and there should be at least one meeting every fortnight. The meeting can provide opportunities for co-operative thinking and staff planning.* Similarly, the education standards officers (70%) in the study indicated that headteachers should be meeting members of staff regularly in order to discuss issues affecting the department. The headteachers should demonstrate interest and support teachers to improve on their competencies and skills in handling their classes.

In the same vein, Ministry of Education (2005) urged the headteachers that it was their role to monitor and evaluate regularly the delivery of academic programmes in order to determine their impact and recommend appropriate interventions. Equally, Ndashye (2007) found that the headteachers and their deputies rarely visited the science department and Physics laboratories making it difficult to fully appreciate the problems faced by teachers.

Respondents views on whether lack of laboratory assistants has contributed to teachers of Physics failing to conduct experiments. Of the 42 checklists which was submitted by the heads of science departments, it was clearly noted that thirty-eight (94%) high schools had no trained laboratory assistants and four (6%) had indicated that they had qualified laboratory assistants. All the education standards officers indicated that there were no evidence of practical work in most GRZ schools, especially for Grades 10 and 11 classes.

The results of the study show that lack of qualified laboratory assistants in many high schools has contributed to failure by teachers to conduct experiments. In this case, pupils are not experiencing hands on activities and this has contributed to poor results at Grade 12 examinations. In line with this study, Kostyuk (2002) noted that lack of laboratory assistants also contributed to teachers not involving pupils in practical work, as it meant more work for a teacher who was already overburdened.

It should be noted that, in high schools, though the laboratories are available, they need to have well qualified laboratory assistants to manage them. Their absence in schools coupled with the limited qualifications for many seconded teachers teaching O-level Physics means that these teachers have to work extra hard to prepare pupils for Grade 12 final examinations.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Preview

This chapter sets out the conclusions, recommendations arising from the findings and the possibilities for future research.

6.2 Conclusions

The perception towards teaching and learning of Physics by educational administrators is influenced by many factors. Primarily, there are few teachers of Physics appointed in administrative positions. This results in lack of representation of the subject and therefore, lack of promotion of the subject. There is no 'voice' at policy formulation level to raise the concerns despite its importance in the provision of skills in socio-economic development of the nation.

Secondly, many educational administrators, especially high school headteachers regard Physics as a very expensive subject which can dwindle their school budget. Therefore materials and textbooks are not bought. In this regard, Physics is totally dropped or offered to a small number of pupils. School administrators should bear in mind that they have the overall authority to ensure that the institutional programmes such as textbook procurement, as budgeted for should be implemented accordingly, assuming that the financial resources will be provided for. It is furthermore, the duty of the institutional authority to put in place the necessary mechanism of checks and balances by closely monitoring the budgetary trend in terms of implementation, which must not allow any deviation and must be carried out in a transparent manner.

In addition, the number of periods on the time-table is reduced from six to four in most cases. Consequently, practical work is only done in the third term in Grade 12 in readiness for the final examinations. It is therefore, the duty of the headteachers to

implement the prescribed number of periods regardless of their perception towards the teaching and learning of Physics.

The fourth factor is lack of trained laboratory assistants. It becomes tedious on the part of the teacher to prepare the laboratory work when he/ she is required to prepare lessons. Besides 94% of teachers teaching Physics on the Copperbelt province at the time of the study were diploma holders. This had compelled administrators to drop Physics in many schools.

Poor results in Physics, was another factor affecting the perception of teaching and learning of Physics. Headteachers feared that their schools would be tainted if they continued offering Physics since very few pupils passed the subject. Coupled with the fact that the subject is expensive to run makes many headteachers to drop the subject or in certain instances restrict it to few pupils who were considered to be intelligent.

By and large, Kandel in Kochhar (2006) said: *Fundamentally, the purpose of an education administrator is to bring pupils and teachers under such conditions as will more successfully promote the end of education. To enable the right pupils to receive the right education from the right teachers, at a cost within the means of the state, this will enable pupils to profit by their learning.*

6.3 Recommendations

Based on the findings, the following recommendations are set out to address the perception of teaching and learning of Physics identified during the study and issues arising from the conclusions that have been drawn:

1. There should be a deliberate policy of in-service training for teachers of Physics with diplomas. The Ministry of Education should create a bursary to sponsor the teachers as a motivation to attract many would be students.

2. Policy makers should craft a deliberate strategy aimed at providing an enabling and equitable environment for teaching and learning of Physics in all high schools by way of recruiting trained laboratory assistants and furnish laboratories.

3. Education administrators should offer more support for Physics by facilitating procurement of Physics materials, attending departmental meetings, facilitating School participation in Physics extra-curricular activities such as JETS and providing orientation training to science heads of departments.

4. Workshops/ seminars should be held for education standards officers, teachers of Physics, heads of science departments and headteachers by Physics technocrats and ex-Physics students on the significance of teaching and learning Physics.

5. Teachers of Physics should be paid some form of retention allowance such as laboratory allowance to motivate them and retain them in the system.

6. The Ministry of Education should consider appointing qualified Physics teachers into administrative positions such as headteachers; education standards officers and district board secretaries so that they could make decisions that would uplift the teaching and learning of Physics.

7. The Ministry of Education and high school boards should consider providing funds for procurement of teaching and learning materials.

8. The Ministry of Education working in collaboration with the Examination Council of Zambia should create an examination panel to manage and control Physics examinations.

9. The school headteachers and heads of science departments in schools which offer Physics as a subject should be given an orientation designed to teach them on how to effectively administer Physics in the school.

10. Building and maintaining strong Physics departments in universities (and other academic institutions) with opportunities for grants to support research.

6.4 Suggestions for Possible Future Research

This study has revealed the perception of the teaching and learning of Physics in selected high schools of the Copperbelt province. However, the following suggestions have been made for future research:

1. It is recommended that a follow-up of this present study be conducted with a larger sample. The follow-up study will document the perception towards the teaching and learning of Physics on a larger scale.

2. It is worthwhile to investigate the attitude of pupils towards the teaching and learning of Physics.

REFERENCES

A Survey of Physical Science Teachers. African Journal of Research in Mathematics, Science and Technology Education. Vol. 7, pp. 97- 107.

Andersson, H. D. and Komtrick P.G. (1972). **Towards more effective science instructions in Secondary Schools;** Mc Millan publishing company. USA.

Aoki, T. (1985). **Interest, Knowledge and Attitude: Alternative approaches to Curriculum evaluation;** Journal of Curriculum Theorising.

Association for Supervision & Curriculum Development (1961), **Balance in the Curriculum,** National Education Association of the US, Washington. DC.

Baggot, La Velle, L.M., MacFarlane, A., John, P.D. & Brown, R. (2004). **According to the Promises: the Subculture of School Science, Teachers' Pedagogic Identity and the Challenge of ICT. Education, Communication & Information, 4(1).**

Best, J.W. and Kahn, J.V. (1986). **Research in Education,** New Jersey: Prentice Hall.

Blandford, S. (1988). **Resource Management in Schools.** London.

British Council (1997). **Action to Improve English, Mathematics and Science: A Summary Document for the Final GRZ/DfID Joint Review of the AIEMS Project.** British Council.

Bonney, W. R. E and Haris H.F.P (1967). **Examination; pass and failure;** Sir Isaac Pitman and Sons Limited; UK.

Carrol, A. J. (1973). **65 percent Failed, ZASE Bulletin**, vol 4(1).

Chelu, F. K. (1995). **The Training and Utilisation of Teachers in Zambia,** Lusaka. Ministry of Education.

Cohen L. and Manion L. (1997). **Research Methods in Education** London, Roatledge.

Curriculum Development Centre (2000). **Physics High School Syllabus.** Lusaka

Czerniak, C. and Chiarelott, L. (1984). **Science anxiety: An investigation of science achievement, sex and grade level factors.** ERIC: No.ED 243 672.

Darling-Hammond, L. (2000). **Teacher Quality and Student Achievement**: A review of state policy evidence. Education Policy Analysis 8(1).

Education Boards Services (2005). **Principles of Education Boards Government and Management Manual**. Lusaka; Government Printers.

Education Boards Services (2008). **Governance in Education Boards; A Handbook for Planning and Decision Making.** Lusaka; Government Printers.

Examination Council of Zambia (2008). **School Certificate and G. C. E Examiners' Report. Science**. Lusaka.

Examinations Council of Zambia (1998). **School Certificate and GCE Examiner's Reports**: October/ November 1996/ 1997 Examinations. Government Printers, Lusaka. Zambia.

Examinations Council of Zambia (2001). **Physical Science 2000 Examinations**. Government Printers, Lusaka.

Examinations Council of Zambia 2009 **Grade 12 Examination Results, Chief Examiner's Report**. Government Printers, Lusaka.

Examiners' Reports on the 2007 **Joint School Certificate and General Certificate of Education Examinations.**

Fisher, A. Laing, J.E., Stoekel, J.E. and Townsend, J.W. (1991). **Handbook for Family Planning Operation Research design**. New York, Population, Council.

Fuller, B. (1985). **"Raising School Quality in Developing Countries"** in Kelly, M.J. (1991) Education in a Declining Economy, Washington, DC: The World Bank.

Gall, M., Walter, R. and Gall, J.P. (1996). **Educational Research: An Introduction**, New York: Longman Publishers.

Haambokoma, C., Nkhata, B., Kostyuk, V.S., Chabalengula, V., Mbewe, S., Tabakamulamu, M., Ndhlovu, Z.B., Mashanga, R. and Nkhani, D. (2002). **Strengthening of Mathematics and Science Education in Zambian Secondary Schools: Baseline Study Report**, Lusaka. JICA/ MoE.

Hamil, A. (1997). **School Science Review, A journal of the association for Science Education**. Beke Hall, billingshurst, W. Sussex RH14 9HF.

Heneveld, W. (1994). **Planning and Monitoring the quality of Primary Education in Sub-Saharan Africa**. Washington, DC: The World Bank.

Higgins, C. (2007). **Issues in teacher education in Zambia**, Lusaka
International Journal of science education.

International Journal of science education Vol. 18, No. 3. 267-284.

Journal of Education and Human Development. Volume 1, Issue2, 2007.

Kase, L. (2008). **The Confident Leader. How the most successful people go from effective to exceptional.** McGraw-Hill, New Delhi.

Kayungwa, L.J. (2000). **Qualities of an Effective Teacher as perceived by Grade 12 Pupils and Teachers in selected Secondary Schools** in Lusaka. Masters Dissertation, University of Zambia, Lusaka.

Kochhar, S.K. (2006). **Secondary School Administration,** Sterling Publishes Private Ltd, New Delhi

Kostyuk, V. S (1998). **Physics 10. Pupil's Book**. Urania Ltd, Zambia.

Kostyuk V. S (2002). **Findings and Discussions: Physics. In Hambokoma, C et al Strengthening of Mathematics and Science Education in Zambian Secondary Schools.** Basiline Study Report. JICA/ MoE, Lusaka pp. 124-146.

Kostyuk, V. S (2004). **Background and Professional Qualification of Secondary School Physics Teachers in Zambia.** Zango: 24 (14): 85-94, Lusaka, University of Zambia Press.

Kostyuk, V. S (2009). **Availability of Human and Material Resources for the Teaching of Physics in Zambian Secondary Schools. Unpublished manuscript. Department of Mathematics and Science Education**. Lusaka. University of Zambia Press.

Kulbir, S.S. (2003). **Methodology of Research in Education,** New Delhi: Sterling.

Lambert, K (1975) **The role of Head of Departments in Schools**. Education Administration Bulletin.

Leedy, D.P. and Ormrod, E.J. (2001).**Practical Research: Planning and Design**, New Jersey.

Lederman, N. (1992). **Students' and Teachers' conception of the nature of science**: A review of the research. Journal of Research in Science Teaching, 29, 331-359.

Magagula, C. M. (1991).**Training Needs of High School Headteachers of Swaziland, Ed. Dissertation**, University of Toronto.

Maliwatu, J. (2006). **A comparative study of Classroom Practice of Graduate and Non-graduate Teachers of Mathematics** in Selected High Schools of Copperbelt Province. Masters of Education Dissertation, University of Zambia, Lusaka.

Manjula, D., Sharma, Rosemary, M., Kathryn, W. (2006). **What is Physics for Prospective Primary School Teachers,** University of Sydney, Australia.

Maqutu, T. Z. (2002). **Explaining Achievement at O' Level Physical Science Examinations: A Cross-Analysis of Four Schools in Lesotho. Proceedings of the 10th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education.** Durban, pp. 243-250.

Maqutu, T. Z. (2003). **Explaining Success in O' Level Physical Science** in Lesotho. A survey of physical science teachers, African Journal of Research in Science, Mathematics and Technology Education: 7(2) 97-107.

Michael P. (2005). **The Importance of Physics: Breakthrough drive economy, quality of life.** University of Nevada, Las Vegas.

Ministry of Education (2008). **A handbook for Planning and Decision making (EBS),** Lusaka.

Ministry of Education (1996). **Educating our Future.** National Policy on education. Lusaka; Government Printers.

Ministry of Education (1999). **Strategic Plan for Teacher Education**: 2000-2015, Lusaka; Government Printers.

Ministry of Finance and National Planning (2006). Fifth National Development Plan 2006-2010. **Broad based wealth and job creation through citizenry participation and technological advancement**. Lusaka; Government Printers.

Ministry of Finance and National Planning (2006). **Vision 2030 "A prosperous Middle-income Nation By 2030"**. Lusaka: Government Printers.

Ministry of National Education (2007). **Reforming Teachers Towards Educational Equality and Quality.** Directorate General for Quality Improvement of Teachers and Educational Personnel. Directorate of Teacher Profession. Jakarta.

Ministry of Science, Technology and Vocational Training (1994). **National Policy on Science and Technology.** Lusaka, Government Printers.

Ministry of Education (1996). **Educating our Future. National Policy on education**. Lusaka; Government Printers.

Ministry of Education (2007). **Reforming Teachers Towards Educational Equality and Quality**. Jakarta.

Ministry of Education (2010). **School Establishment Model**. Lusaka (Proposal).

Mistade, S.V. (2007). **Science learning matters: An overview of the Science Report card**. Princeton, NJ: Educational Testing Service.

Muchelemba, V. (2001). **Pupils', Teachers' and Community's views about Management Effectiveness of Female and Male Public Secondary School Headteachers** in Lusaka District. Masters Dissertation, University of Zambia, Lusaka.

Muwanga-Zake, J. F. (2000). **Is Science Education in South Africa in a Crisis?** The Eastern Cape Experience; Journal of the Southern African Association for Research in Mathematics, Science and Technology Education 4 (1): 1-11.

Muzamara, P.M. (2007). **Becoming an effective Science Teacher**. National in Service Teachers' College, Chongwe, Lusaka.

Napoleon, H. (2007). **You Can Work Your Own Miracles. How to Condition Yourself for Success**. Napoleon Hill Foundation. India.

Ndashye, M (2007). **Response of Administrators to poor performance in O-level physics examination.** An MA Dissertation, University of Zambia.

Nixon, J. ed (1982). **Drama and the whole curriculum**. London. Hutchinson.

Ogunniyi, M. B. (1986). **Two Decades of Science Education in Africa**, Science Education; 70(2):111-112.

Ogunniyi, M. B. (1996). **Science, Technology and Mathematics: The problem of developing Critical human capital in Africa**. International Journal of Science Education; 18(3):267-284

Ogunniyi, M. B. (ed)(1996). **Promoting Public Understanding of Science and Technology in Southern Africa;** Proceedings of a Southern African Conference, Cape Town, 4-7 December 1996. Pp. 1-3.

Osgood, C.E., Suci, G.J. and Tannebaum, P.H. (1957). **The measurement of meaning,** Urbana: University of Illinois Press.

Parkinson, J. (1998). **The Effective Teaching of Secondary Science,** Harlow Essex Cm 20 2JE England.

Post (2010). Thursday, April 1.

Rief, F. (1985). **Acquiring an effective Understanding of Scientific concepts,** West, L. and Pines, A. (eds), Cognitive Structure and Conceptual change. Orlando FL Academic Press.

Roger A.F. (1996). **Challenges in Teaching and Learning Introductory Physics,** Santa Barbara, Califonia.

Robottom, I. & Hart, P (1993). **Towards a meta-search agenda in Science and Environmental education.**

Sherrington, R. (1994), **Science Teachers' Handbook**; Stanley Thornes, Ellenborough House, England.

Struwig, F.W., and Stead, G.B. (2001). **Planning and Designing and Reporting Research,** Cape Town: Longman.

Swift, D. (1998). **Physics for Rural Development**, New York: John Wiley & Sons pp. 3-5

Till, W.V. (1971). **Curriculum: Quest for Relevance**. New York: Houghton, Muffin Company.

Toews, W. (1988). **"Why take Physics in High School ....why plan to teach Physics?"** The Physics Teacher, 26(7), pp 458-460

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Appendix I

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES.

SEMI-STRUCTURED INTERVIEW INSTRUMENT FOR EDUCATION STANDARDS OFFICERS

To my esteemed Respondent,

My name is Stephen Chishiko and I am a Master student at the University of Zambia. I am conducting this research in partial fulfilment of the requirement for the degree of Masters of Education in Educational Administration. The findings of the research shall not in any way be used for any purpose other than purely academic. Your responses shall, therefore, be treated with uttermost and strict confidentially.

PART ONE: IDENTIFICATION DATA

PROVINCE: ----------

DISTRICT: ----------

PART TWO: BACKGROUND INFORMATION

1. Sex of the Respondent?
   a) Male [ ] Female [ ]
2. Age of the Respondent? .....
3. The highest qualification of the Respondent?
   a) Diploma [ ]
   b) Advanced Diploma [ ]
   c) Bachelor Degree [ ]
   d) Master Degree [ ]

4. The subject(s) of specialization of the Respondent?

.....

5. The institution at which the Respondent was trained?

.....

6. What is the working experience in the current post of the Respondent?

..... years.

PART THREE: FOCUS ON THE OBJECTIVES

(A) Respondents' Views Towards the Teaching and Learning of O-level Physics in High Schools

Please indicate your Tick [√] or fill in the blanks where appropriate.

1) In your view, is O-level Physics the most popular subject in School?
   a) Yes [ ] b) No [ ]
2) In your view, are O-level Physics concepts ease to understand?
   a) Yes [ ] b) No [ ]
3) How does lack of quality textbooks affect the teaching and learning of O-level Physics?

   .....

   .....
4) In your opinion, how does the limited qualification of teachers affect the teaching and learning of O-level Physics?

   .....

   .....
5) In your view, how does lack of equipment and apparatus in high schools affect the teaching and learning of O-level Physics?

   .....

   .....

6) How does lack of laboratory assistants contribute to teachers failing to involve pupils in practical work?

.....

.....

(B) Respondents' Perception Towards the Decrease in the Number of Centres Offering O-level Physics.

7) In your opinion, how does the absence of qualified teachers of Physics affect the offering of the subject in high schools?

.....

.....

8) In your opinion, why do many pupils shun and drop the learning of O-level Physics in schools?

.....

.....

9) In your opinion, do you agree with the perception that teaching O-level Physics requires more inputs than other subjects such as English and Mathematics?

Yes [ ] b) No [ ]

Justify your view .....

.....

10) From your experience, do you testify that offering O-level Physics in a high school is very expensive?

.....

.....

(D) The Views regarding the Support Education Administrators Render Towards the Teaching and Learning of O-level Physics in High Schools.

16) What is the policy of the school on the procurement of textbooks and other related teaching and learning materials?

.....

.....

17) In your opinion, how can the teachers of O-level Physics be motivated to conduct experiments during their extra time?

.....

.....

18) Do teachers of Physics have adequate opportunities to be sponsored either by GRZ or school board to further their studies at the universities?

.....

.....

19) In your view, do we have many teachers of Physics promoted to higher positions of authority?

Yes [ ] b) No [ ]

Justify your view .....

.....

20) Do headteachers conduct professional meetings with members of the science department?

.....

.....

END OF INTERVIEW.

Thank You for Spending Your Time with Me.

Appendix II

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES.

FOCUSED GROUP DISCUSSION INSTRUMENT FOR HIGH SCHOOL HEADTEACHERS

To my esteemed Respondent,

My name is Stephen Chishiko and I am a Master student at the University of Zambia. I am conducting this research in partial fulfilment of the requirement for the degree of Masters of Education in Educational Administration. The findings of the research shall not in any way be used for any purpose other than purely academic. Your responses shall, therefore, be treated with uttermost and strict confidentially.

PART ONE: IDENTIFICATION DATA

PROVINCE: ----------

DISTRICT: ----------

SCHOOL: ----------

PART TWO: BACKGROUND INFORMATION

1. Sex of the Respondent?

   b) Male [ ] Female [ ]

2. Age of the Respondent? .....

3. The highest qualification of the Respondent?

   e) Diploma [ ]

   f) Advanced Diploma [ ]

   g) Bachelor Degree [ ]

   h) Master Degree [ ]

4. The subject(s) of specialization of the Respondent?

.....

5. The institution at which the Respondent was trained?

.....

6. What is the working experience in the current post of the Respondent?

..... years.

PART THREE: FOCUS ON THE OBJECTIVES

(A) Respondents' Views Towards the Teaching and Learning of O-level Physics in High Schools

Please indicate your Tick [√] or fill in the blanks where appropriate.

21) In your view, is O-level Physics the most popular subject in School?

b) Yes [ ] b) No [ ]

22) In your view, are O-level Physics concepts ease to understand?

b) Yes [ ] b) No [ ]

23) How does lack of quality textbooks affect the teaching and learning of O-level Physics?

.....

.....

24) In your opinion, how does the limited qualification of teachers affect the teaching and learning of O-level Physics?

.....

.....

25) In your view, how does lack of equipment and apparatus in high schools affect the teaching and learning of O-level Physics?

.....

.....

26) How does lack of laboratory assistants contribute to teachers failing to involve pupils in practical work?

.....

.....

(B) Respondents' Perception Towards the Decrease in the Number of Centres Offering O-level Physics.

27) In your opinion, how does the absence of qualified teachers of Physics affect the offering of the subject in high schools?

.....

.....

28) In your opinion, why do many pupils shun and drop the learning of O-level Physics in schools?

.....

.....

29) In your opinion, do you agree with the perception that teaching O-level Physics requires more inputs than other subjects such as English and Mathematics?

Yes [ ] b) No [ ]

Justify your view .....

.....

30) From your experience, do you testify that offering O-level Physics in a high school is very expensive?

.....

.....

(C) Education Administrators Views about the Performance of O-level Physics in High Schools.

31) In your opinion, do you agree that the performance in O-level Physics is generally poor? a) Yes [ ] b) No [ ]

Justify your view .....

.....

32) In your opinion, what could be the reason for poor performance in O-level Physics in many schools?

.....

.....

33) In your opinion, how does the overload of periods on a few teachers of O-level Physics cause low morale?

.....

.....

34) How does it affect the pupils/ schools to teach O-level Physics by non-science trained teachers?

.....

.....

35) In your view, why is O-level Physics allocated fewer periods than prescribed by the Ministry of Education?

.....

.....

(D) The Views regarding the Support Education Administrators Render Towards the Teaching and Learning of O-level Physics in High Schools.

36) What is the policy of the school on the procurement of textbooks and other related teaching and learning materials?

.....

.....

37) In your opinion, how can the teachers of O-level Physics be motivated to conduct experiments during their extra time?

.....

.....

38) Do teachers of Physics have adequate opportunities to be sponsored either by GRZ or school board to further their studies at the universities?

.....

.....

39) In your view, do we have many teachers of Physics promoted to higher positions of authority?

Yes [ ] b) No [ ]

Justify your view .....

.....

40) Do headteachers conduct professional meetings with members of the science department?

.....

.....

END OF DISCUSSION.

Thank You for Spending Your Time with Me.

Appendix III

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

QUESTIONNAIRE FOR SCIENCE HEADS OF DEPARTMENTS

Dear Esteemed Respondent,

My name is Stephen Chishiko and I am a Master student at the University of Zambia. I am conducting this research in partial fulfilment of the requirement for the degree of Masters of Education in Educational Administration. The findings of the research shall not in any way be used for any purpose other than purely academic. Your responses shall, therefore, be treated with uttermost and strict confidentially.

PART ONE: IDENTIFICATION DATA

PROVINCE: ----------

DISTRICT: ----------

SCHOOL: ----------

PART TWO: BACKGROUND INFORMATION

1. Sex of the Respondent?

   c) Male [ ] Female [ ]

2. Age of the Respondent? .....

3. The highest qualification of the Respondent?

   i) Diploma [ ]

j) Advanced Diploma [ ]

k) Bachelor Degree [ ]

l) Master Degree [ ]

4. The subject(s) of specialization of the Respondent?

.....

5. The institution at which the Respondent was trained?

.....

6. What is the working experience in the current post of the Respondent?

..... years.

PART THREE: FOCUS ON THE OBJECTIVES

(A) Respondents' Views Towards the Teaching and Learning of O-level Physics in High Schools

Please indicate your Tick [√].

1) O-level Physics is the most popular subject in School?

a) Agree [ ] b) Disagree [ ] c) I don't know

2) O-level Physics concepts are ease to understand?

a) Agree [ ] b) Disagree [ ] c) I don't know

3) Is O-level Physics shunned in high schools due to lack of quality textbooks?

a) Agree [ ] b) Disagree [ ] c) I don't know

4) Pupils drop O-level Physics because of lack of qualified teachers in the subject.

a) Agree [ ] b) Disagree [ ] c) I don't know

5) O-level Physics is taught in abstract due to lack of equipment and apparatus in high schools.

a) Agree [ ] b) Disagree [ ] c) I don't know

6) Lack of laboratory assistants contribute to teachers of Physics failing to conduct experiments.

a) Agree [ ] b) Disagree [ ] c) I don't know

(B) Education Administrators' Perception Towards the Decrease in the Number of Centres Offering O-level Physics.

7) O-level Physics cannot be offered because there are no qualified teachers of Physics

a) Agree [ ] b) Disagree [ ] c) I don't know

8) O-level Physics is very difficult; hence pupils drop it.

a) Agree [ ] b) Disagree [ ] c) I don't know

9) Teaching O-level Physics requires more input than other subjects such as English language and Mathematics

a) Agree [ ] b) Disagree [ ] c) I don't know

10) Offering O-level Physics in a high school is very expensive

a) Agree [ ] b) Disagree [ ] c) I don't know

11) The performance of O-level Physics examination is generally poor

a) Agree [ ] b) Disagree [ ] c) I don't know

(C) Education Administrators Views about the Performance of O-level Physics in High Schools.

12) Pupils do not perform well in O-level Physics due to lack of qualified teachers

a) Agree [ ] b) Disagree [ ] c) I don't know

13) There are no quality O-level Physics textbooks in high schools

a) Agree [ ] b) Disagree [ ] c) I don't know

14) Teachers of O-level Physics suffer from low morale due to an overload of periods

a) Agree [ ] b) Disagree [ ] c) I don't know

15) Some teachers who teach O-level Physics are not science trained teachers

a) Agree [ ] b) Disagree [ ] c) I don't know

16) There are fewer periods allocated to the teaching and learning of O-level Physics than the prescribed ones

a) Agree [ ] b) Disagree [ ] c) I don't know

(D) The Views regarding the Support Education Administrators Render Towards the Teaching and Learning of O-level Physics in High Schools.

17) O-level Physics textbooks and other related teaching and learning materials are procured every term for the science department

a) Agree [ ] b) Disagree [ ] c) I don't know

18) Teachers of O-level Physics should be given an incentive for the extra time spent in conducting experiments in the laboratory

a) Agree [ ] b) Disagree [ ] c) I don't know

19) Teachers are sponsored to further their studies under the GRZ or High School Board Sponsorship

a) Agree [ ] b) Disagree [ ] c) I don't know

20) It is easier to promote a teacher of Physics to the post of a headteacher than teachers of English language and Mathematics

a) Agree [ ] b) Disagree [ ] c) I don't know

21) Headteachers conduct professional meetings with members of the science department every term

a) Agree [ ] b) Disagree [ ] c) I don't know

END OF QUESTIONNAIRE.

Thank You for Spending Your Time with Me.

Appendix IV

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

CHECKLIST SCHEDULE

Dear Respondent,

I am a post graduate student at the University of Zambia (UNZA). You have been selected to participate in providing information to this research, which is part of my studies. This information is ly for academic purposes.

INSTRUCTIONS

1. Please read each statement and put a tick (√) in the brackets provided against your answer and put your answers in the spaces provided.
2. Please feel free and be as honest as possible in answering the questions. There are neither right nor wrong answers.
3. Do not write your name. Your responses will be treated with the strictest confidentiality and will be used solely for the purposes of this study.

1) School: .....

2) District: .....

3) Gender of head teacher: M [ ] F [ ]

4) Does your school have a laboratory for science? Yes [ ] No [ ]

5) Does your school have a trained laboratory assistant? Yes [ ] No [ ]

6) How well is your laboratory equipped?

   a) Adequately [ ] Moderately adequate [ ]

   b) Not adequate [ ]

7) a) Does your school offer sciences? Yes [ ] No [ ]

   b) If the answer is '**Yes**' what was the number of pupils taking Physics, approximately?

Year	Grade 10	Grade 11	Grade 12
2009			

8) How many degree holders trained in Physics education does your school have?

   .....

9) How many diploma holders in your school are in the Physics section?

   .....

10) What is the book/ pupil ratio like in Physics in your school?

    (E.g. 1:1 means 1 book to 1 pupil)

    .....

END OF QUESTIONNAIRE.

Thank you for spending your precious time.

Appendix V

NAMES OF SELECTED SCHOOLS WHERE RESPONDENTS WERE DRAWN

S/ No.	Name of High School	Name of District
1	Chambishi	Chambishi
2	Mitondo	Chililabombwe
3	Muleya	Chililabombwe
4	Chililabombwe	Chililabombwe
5	Chikola	Chingola
6	Mainteneke	Chingola
7	Chingola	Chingola
8	Kabundi	Chingola
9	Sacred Hearts	Chingola
10	Kalulushi	Kalulushi
11	Mindolo	Kitwe
12	Ipusukilo	Kitwe
13	Malela	Kitwe
14	Mitanto	Kitwe
15	Lima	Kitwe
16	St. Francis	Kitwe
17	Ndeke	Kitwe
18	Mukuba	Kitwe
19	Chibote	Kitwe
20	Chimwemwe	Kitwe
21	Helen Kaunda	Kitwe
22	Highland	Kitwe
23	Mpelembe	Kitwe
24	St. Johns	Kitwe
25	Luanshya Girls	Luanshya
26	Roan Antelope	Luanshya

27	Mpatamatu	Luanshya
28	Luanshya Boys	Luanshya
29	Kafulafuta	Masaiti
30	Mushili	Masaiti
31	Mpongwe	Mpongwe
32	Ibenga Girls	Mpongwe
33	Butondo	Mufulira
34	Mufulira	Mufulira
35	Chankwa	Mufulira
36	Lubuto	Ndola
37	Dominican Convent	Ndola
38	Chiwala	Ndola
39	Temweni	Ndola
40	Chifubu	Ndola
41	Fatima	Ndola
42	Kansenshi	Ndola
43	Masala	Ndola
44	Ndola Modern	Ndola
45	Nsansa	Ndola
46	St. Andrews	Ndola

UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION

Telephone: 291381
Fax: +260-1-292702

P O Box 32379
Lusaka, Zambia

30th January, 2008

TO WHOM IT MAY CONCERN

Dear Sir/Madam

RE: FIELD WORK FOR M.ED STUDENTS

The bearer of this letter Mr./Ms. STEPHEN CHISHIKO computer number 52600446 is a duly registered student at the University of Zambia, School of Education.

The student is taking a Masters Programme in Education. The Programme has a fieldwork component which he/she has to complete.

We shall greatly appreciate if the necessary assistance is rendered to him/her.

Yours Faithfully

P. C. Manchishi (Dr.)
ASSISTANT DEAN (PG), SCHOOL OF EDUCATION

cc. Dean, Education
Director, DRGS

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

The Director,
Examinations Council of Zambia
P.O. Box 50432
LUSAKA

30th December, 2008-12-30

Dear Sir,

FIELDWORK FOR Med STUDENTS

I wish to certify that Mr Stephen Chishiko Computer No 526004496 is a postgraduate student in the Department of Educational Administration and Policy Studies. He has proceeded to Part II of his MEd (Educational Administration) degree.

The purpose of writing this letter is to request you to attend to him at the Examinations Council of Zambia. He is interested in the Grade 12 examinations results of the last five years.

I would be grateful if at all you attended to him.

Henry J. Msango
HEAD, EAPS DEPARTMENT

Mr. Kalimnwa, Please attend to

EXAMINATIONS COUNCIL OF ZAMBIA
30 DEC 2008
ASSISTANT DIRECTOR
RESEARCH AND TEST DEVELOPMENT

0955 790309 after wednesday next wk.

Cc: Dean, Education
Assistant Dean, PG Education
Assistant Registrar, Education

EXAMINATIONS COUNCIL OF ZAMBIA
COPPERBELT PROVINCE
2009 JOINT EXAMINATIONS FOR THE SCHOOL CERTIFICATE AND GCE RESULTS STATISTICS

		Boys							Girls							Total							
	Copperbelt Province	SC	GCE			Total	Total	%	SC	GCE			Total	Total	%	SC	GCE			Total	Total	% SC	
Code	School	Cert	Cert	Fail	Abs	Sat	Entered	SC	Cert	Cert	Fail	Abs	Sat	Entered	SC	Cert	Cert	Fail	Abs	Sat	Entered	2009	2008
5016	CHILILABOMBWE SECONDA	136	64	2	3	202	205	67.3	72	58	2	3	132	135	54.5	208	122	4	6	334	340	62.28	69.3
5320	MULEYA SECONDARY SCHO	53	58	4	1	115	116	46.1	19	49	2	6	70	76	27.1	72	107	6	7	185	192	38.92	52.4
5323	MITONDO SECONDARY SCH	49	63	4	1	116	117	42.2	36	66	0	3	104	107	34.6	85	131	4	4	220	224	38.64	45.8
5417	KCM NKONKOLA TRUST (P	28	0	0	0	28	28	100.0	26	2	0	1	28	29	92.9	54	2	0	1	56	57	96.43	
5003	KABUNDI SECONDARY SCH	159	31	1	0	191	191	83.2	111	42	1	1	154	155	72.1	270	73	2	1	345	346	78.26	72.6
5004	CHINGOLA SECONDARY SC	87	66	5	2	158	160	55.1	54	74	8	2	136	138	39.7	141	140	13	4	294	298	47.96	56.3
5032	CHIKOLA SECONDARY SCH	89	48	9	3	146	149	61.0	78	57	4	0	139	139	56.1	167	105	13	3	285	288	58.60	66.9
5036	SACRED HEART CONVENT	17	0	0	0	17	17	100.0	18	0	0	0	18	18	100.0	35	0	0	0	35	35	100.00	100
5107	AGAPE INTERNATIONAL A	22	5	0	0	27	27	81.5	27	4	0	0	31	31	87.1	49	9	0	0	58	58	84.48	
5259	MAITENEKE HIGH SCHOOL	47	73	3	4	123	127	38.2	18	74	8	7	100	107	18.0	65	147	11	11	223	234	29.15	16.7
5261	SEKELA HIGH SCHOOL	91	26	2	0	119	119	76.5	62	49	6	1	131	132	62.6	173	75	2	1	250	251	69.20	73.1
5378	KCM NCHANGA SECONDARY	30	0	0	0	30	30	100.0	29	0	9	1	29	30	100.0	59	0	0	1	59	60	100.00	
5018	KALULUSHI SECONDARY S	96	83	1	9	180	189	53.3	75	110	3	9	188	197	39.9	171	193	4	18	368	386	46.47	77.1
5024	CHATI SECONDARY SCHOO	23	43	0	5	66	71	34.8	5	16	0	2	21	23	23.8	28	59	0	7	87	94	32.18	40.5
5025	CHAMBISHI SECONDARY S	37	33	0	1	70	71	52.9	23	30	0	0	53	53	43.4	60	63	0	1	123	124	48.78	71
5256	CHAVUMA SECONDARY SCH	27	32	0	1	59	60	45.8	32	32	0	0	64	64	50.0	59	64	0	1	123	124	47.97	70.6
5358	KALULUSHI TRUST HIGH	20	1	0	0	21	21	95.2	18	1	0	0	19	19	94.7	38	2	0	0	40	40	95.00	100
5001	HELEN KAUNDA SECONDAR	0	0	0	0	0	0	0.0	198	71	2	1	271	272	73.1	198	71	2	1	271	272	73.06	74.5
5002	KITWE BOYS SECONDARY	244	108	1	4	353	357	69.1	1	0	0	0	1	1	100.0	245	108	1	4	354	358	69.21	72.5
5015	CHAMBOLI SECONDARY SC	132	53	0	2	185	187	71.4	84	60	1	0	145	145	57.9	216	113	1	2	330	332	65.45	82.2
5020	MINDOLO SECONDARY SCH	85	122	5	2	212	214	40.1	57	67	2	2	126	128	45.2	142	189	7	4	338	342	42.01	62.9
5021	NDEKE SECONDARY SCHOO	116	62	0	0	178	178	65.2	137	63	1	2	201	203	68.2	253	125	1	2	379	381	66.75	70.2
5027	MPELEMBE SECONDARY SC	50	0	0	0	50	50	100.0	33	0	0	1	33	34	100.0	83	0	0	1	83	84	100.00	100
5030	MUKUBA SECONDARY SCHO	266	80	1	5	347	352	76.7	0	0	0	0	0	0	0.0	266	80	1	5	347	352	76.66	81.3
5048	ST. JOHNS CONVENT SEC	14	0	0	0	14	14	100.0	33	1	0	0	34	34	97.1	47	1	0	0	48	48	97.92	100
5222	HIGHLAND SECONDARY SC	5	8	1	1	14	15	35.7	4	24	1	3	29	32	13.8	9	32	2	4	43	47	20.93	74.7
5226	KAMFINSA HIGH SCHOOL	29	34	1	1	64	66	45.3	7	32	0	2	39	41	17.9	36	66	1	3	103	107	34.95	58.9
5257	SPRING BOARD ACADEMY	13	2	0		15	15	86.7	18	2	0	0	20	20	90.0	31	4	0	0	35	35	88.57	97.3
5265	MITANTO HIGH SCHOOL	74	80	4		158	161	46.8	56	79	1	5	136	141	41.2	130	159	5	8	294	302	44.22	56.3
5267	MALELA SECONDARY SCHO	37	50	1		88	89	42.0	17	54	0	2	71	73	23.9	54	104	1	3	159	162	33.96	69.2

5329	MUCHUNGA HIGH SCHOOL	12	39	6	4	57	61	21.1	13	64	1	7	78	85	16.7	25	103	7	11	135	146	18.52	46.2
5339	CHIBOTE GIRLS HIGH S	0	0	0	0	0	0	0.0	112	69	0	3	181	184	61.9	112	69	0	3	181	184	61.88	64.00
5343	NKANA HIGH SCHOOL	18	12	1	1	31	32	56.1	26	27	0	0	53	53	49.1	44	39	1	1	84	85	52.38	86.5
5346	CHIMWEMWE SECONDARY	61	53	4	4	118	122	51.7	31	40	0	1	71	72	43.7	92	93	4	5	189	194	48.68	59.4
5351	WUSAKILE SECONDARY SC	53	38	0	1	91	92	58.2	24	48	2	5	74	79	32.4	77	86	2	6	165	171	46.67	73.5
5353	AGAPE COMMUNITY SCHOO	9	15	0	3	24	27	37.5	12	16	0	3	28	31	42.9	21	31	0	6	52	58	40.38	64.6
5362	FAITH TRUST ACADEMY	28	1	0	0	29	29	96.6	39	6	0	1	45	46	86.7	67	7	0	1	74	75	90.54	97.8
5008	LUANSHYA BOYS SECONDA	199	96	1	5	296	301	67.2	0	0	0	0	0	0	0.0	199	96	1	5	296	301	67.23	77.2
5009	LUANSHYA GIRLS SEC. S	0	0	0	0	0	0	0.0	133	116	1	1	250	251	53.2	133	116	1	1	250	251	53.20	68.6
5019	MPATAMATU SECONDARY S	77	74	2	1	153	154	49.3	65	97	1	1	163	164	39.9	142	171	3	2	316	318	44.94	53.2
5022	NKULUMASHIBA HIGH SCH	46	25	0	2	71	73	64.8	38	31	1	0	70	70	54.3	84	56	1	2	141	143	59.57	55.0
5031	ROAN ANTELOPE SECONDA	75	95	1	1	171	172	43.8	45	70	1	2	117	119	39.3	121	165	2	3	288	291	42.01	57.9
5038	TWASHUKA SECONDARY SC	49	40	1	1	90	91	54.4	19	33	1	0	53	53	35.8	68	73	2	1	143	144	47.55	43.1
5053	DA-GAMA SECONDARY SCH	0	0	0	0	0	0	0.0	5	3	0	0	8	8	62.5	5	3	0	0	8	8	62.50	100
5232	LUANSHYA CENTRAL HIGH	43	53	6	3	102	105	42.2	48	77	3	3	128	131	37.5	91	130	9	6	230	236	39.57	44.7
5017	CHIWALA SECONDARY SCH	170	64	2	3	236	239	72.0	0	6	0	0	6	6	0.0	170	70	2	3	242	245	70.25	86.6
5028	MAHATMA GANDHI SECOND	5	16	1	0	22	22	22.7	30	48	6	7	84	91	35.7	35	64	7	7	106	113	33.92	
5345	MUPAPA ADVENTIST ACAD	35	20	2	1	57	58	61.4	25	25	3	2	53	55	47.2	60	45	5	3	110	113	54.55	45.5
5349	KEMUS EDUCATION INSTI	9	23	0	5	32	37	28.1	7	17	1	5	25	30	28.0	16	40	1	10	57	67	28.07	42.5
5005	BUTONDO SECONDARY SCH	88	61	7	3	146	149	60.3	33	35	0	0	68	68	48.5	121	86	7	3	214	217	56.54	55.1
5006	MUFULIRA SECONDARY SC	184	87	1	1	272	273	67.6	90	71	0	0	161	161	55.9	274	158	1	1	433	434	63.28	75.9
5029	KANTANSHI SECONDARY S	122	85	2	3	209	212	58.4	74	64	1	1	139	140	53.2	196	149	3	4	348	352	56.32	70.0
5045	IPUSUKILO HIGH SCHOOL	66	34	2	2	102	104	64.7	52	26	1	1	79	80	65.8	118	60	3	3	181	184	65.19	66.8
5054	CHANKWA HIGH SCHOOL	42	27	1	5	70	75	60.0	20	38	1	1	59	60	33.9	62	65	2	6	129	135	48.06	68.2
5236	PAMODZI GIRLS HIGH SC	0	0	0	0	0	0	0.0	60	96	3	3	159	162	37.7	60	96	3	3	159	162	37.74	69.7
5241	EAGLE SCHOOL	9	2	0	0	11	11	81.8	61	11	0	2	72	74	84.7	70	13	0	2	83	85	84.34	89.5
5352	TAUNG-UP HIGH SCHOOL	30	26	1	1	57	58	52.6	25	16	1	1	42	43	59.5	55	42	2	2	99	101	55.56	56.3
5354	NSANSA INTER-EDUCATIO	20	1	0	1	21	22	95.2	18	1	0	0	19	19	94.7	38	2	0	1	40	41	95.00	100
5007	KANSENSHI SECONDARY S	131	32	1	2	164	166	78.9	122	48	1	0	171	171	71.3	253	80	2	2	335	337	75.52	91.4
5010	CHIFUBU SECONDARY SCH	137	79	4	9	220	229	62.3	81	105	0	2	186	188	43.5	218	184	4	11	406	417	53.69	69.9
5011	FATIMA GIRLS SECONDAR	0	0	0	0	0	0	0.0	73	0	0	1	73	74	100.0	73	0	0	1	73	74	100.00	100
5013	UBUTO SECONDARY SCHO	121	59	2	4	182	186	65.5	81	70	2	4	153	157	52.9	202	129	4	8	335	343	60.30	74.7
5014	MASALA SECONDARY SCHO	155	54	1	0	210	210	73.6	97	64	0	2	161	163	60.2	252	118	1	2	371	373	67.52	73.7
5034	TUG-ARGAN SECONDARY S	34	23	0	0	57	57	59.6	17	22	0	0	39	39	43.6	51	45	0	0	96	96	53.13	50.0
5035	DOMINICAN CONVENT NDO	0	0	0	0	0	0	0.0	110	5	0	1	115	116	95.7	110	5	0	1	115	116	95.65	98.3
5073	SATHYA SAI SECONDARY	16	2	0	0	18	18	88.9	0	0	0	0	0	0	0.0	16	2	0	0	18	18	88.89	100

5137	ST. ANDREWS HIGH SCHO	24	12	0	1	36	37	66.7	24	15	0	0	39	39	61.5	48	27	0	1	75	76	64.00	87.8
5218	MUZI HIGH SCHOOL	32	5	0	0	37	37	86.5	33	3	0	1	36	37	91.7	65	8	0	1	73	74	89.04	81.4
5333	TEMWENI HIGH SCHOOL	93	25	0	5	118	123	78.8	64	46	0	0	110	110	58.2	157	71	0	5	228	233	68.86	88.7
5350	MILEMU HIGH SCHOOL	36	38	2	6	70	82	47.4	25	62	3	1	90	91	27.8	61	100	5	7	166	173	36.75	66.3
5371	NDEKE CARITAS HIGH	32	28	5	2	65	67	49.2	9	39	6	1	54	55	16.7	41	67	11	3	119	122	34.45	
5037	ST JOSEPHS SEC (KALUM	30	45	0	4	75	79	40.0	24	19	1	3	44	47	54.5	54	64	1	7	119	126	45.38	58.6
5071	ST. JOSEPH SCHOOL FOR	5	0	0	0	5	5	100.0	1	0	0	0	1	1	100.0	6	0	0	0	6	6	100.00	50.0
5012	IBENGA GIRLS SECONDAR	0	0	0	0	0	0	0.0	76	1	0	0	77	77	98.7	76	1	0	0	77	77	98.70	100
5033	MPONGWE SECONDARY SC	41	13	0	0	54	54	75.9	37	6	1	1	44	45	84.1	78	19	1	1	98	99	79.59	81.7
	Copperbelt total	4413	2617	101	132	7131	7263	61.9	3348	2775	78	121	6201	6322	54.0	7761	5392	179	253	13312	13585	58.21	68.5