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Yes we can , a significant improvement in performance of Extended stream ,nearly doubling their pass rate of the previous year : an analysis of performance of EP students in Science and Physics at NCE 2022-23

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ABSTRACT: *Yes we can implies that even the slow abilities of Extended stream can achieve. As part of the ongoing reforms, the first batch of extended stream took part for the NCE examination together with the mainstream, the same national paper in 2022. The extended stream covers the grade 9 programme over two years namely grade 9 extended and grade 9 plus extended. As expected, it has been a slow start in 2022 with a reasonable low percentage of pass rate. A significant improvement has been noticed in 2023 for the NCE examination in Science. The percentage pass has nearly doubled in Science from 19.9 % to 36.7 %. Science comprises Biology, Chemistry and Physics.*

KEYWORDS: NCE, Extended stream, Science, Physics

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I. INTRODUCTION

The ongoing reform makes path for continuous learning for the students as well as for the extended stream.After their PSAC, those who are successful, proceed to mainstream from grade 7 to grade 9 and then take part in the NCE examinations. The slow learners who cannot pass their PSAC move to the extended stream after PSAC. They do not take part in the NCE exams at grade 9 Extended but after another year, in their 9 Extended Plus year.

The first batch extended that took part in the NCE examination happened in 2022 and as expected the results was not significant but there were still some who passed. In 2023 the results showed a progression, namely in Science. It is an encouraging sign since this can only get better.

II. LITERATURE

Science subject at Grade 9 and Grade 9 extended Plus level comprises Chemistry, Biology and Physics. Physics comprises topics such as Measurement in Science , Reflection and refraction of light , Energy , Heat and Temperature, Motion, Electricity. Biology comprises topics such as Blood Circulatory system, Reproduction, Biodiversity, Nutrition in Plants. In Chemistry students are expected to know topics such as Atmosphere and environment, Mixtures and separation and techniques, Language of Chemistry, Metals and reactivity series, Salts.

Although the percentage and result are obtain as Science , the 3 subjects are taken in 3 different occasions and 3 different papers with a percentage of 33,33 and 34 % combined to make Science.

III. DISCUSSION

In Physics (MIE, 2024) the first chapter Measurement in Science the learning outcomes are listed as Stating the SI units of length, mass, volume, time and temperature, Describing how to measure a variety of lengths with appropriate accuracy using tapes, rulers and vernier calipers, Recognising the types of errors associated with the measurement of length, namely, parallax error and zero error, Describing how to use a measuring cylinder to measure the volume of a liquid, Discussing the experimental determination of the volume of a small irregular solid, Reading balances to record mass in its correct unit , Describing how to measure a variety of time intervals using stopwatches and a simple pendulum, Recording the temperature from laboratory and clinical thermometers. From examiner's report, students encounter difficulties in describing the displacement method and in identifying the correct SI units. The second chapter they are assessed on is Reflection and refraction of light with learning outcomes such as Investigate the importance of light for vision, Differentiate between luminous and non-luminous objects by giving examples, Recognise that stars produce their own light , Recognise that planets and moons reflect light received from the sun • Describe a simple

experiment to show that light travels in straight lines • Describe the reflection of light • State the laws of reflection• Use ray diagrams to demonstrate reflection• Describe and explain the refraction of light • Investigate refraction of light in daily life examples and use ray diagrams to illustrate the refraction of light. From examiner's report, it is the less scoring topic. Students encounter difficulties in drawing the ray of lights correctly and make confusion between reflection of light and refraction of light. Few correct answers are obtained when they are examined for drawings of refraction of light. The 3rd chapter is Energy, Heat and Temperature with learning outcomes • Explain the concept of work and solve problems using W= Fd, where d is the distance moved in the direction of the force• Relate power to work done and time • State the principle of conservation of energy• Solve problems related to the conservation of energy in simple systems including falling objects and the simple pendulum • Describe the production of electricity using renewable and non-renewable sources of energy• Classify the polluting and non-polluting sources of energy for electricity production • List the advantages and disadvantages of producing electricity using renewable and non-renewable sources of energy • Demonstrate an understanding of the concept of heat and temperature • Describe the expansion of solids, liquids and gases • Explain some of the everyday uses and dangers of the thermal expansion. From examiner's report, students encounter difficulties in using correctly the formula for work done. Those having mathematical weaknesses lose much marks while answering this topic. The 4th chapter is Motion and has learning outcomes • Distinguish between scalars and vectors and give examples of each • Define distance and displacement

• Calculate distance and displacement in different situations• Define speed and velocity• Calculate speed using the equation speed = distance/time and velocity using the equation velocity = displacement/time • Define acceleration• Calculate acceleration using the equation acceleration = change in velocity/time taken • Demonstrate an understanding that deceleration is a negative acceleration• Plot and interpret speed-time graph for motion in a straight line• Recognise from the shape of a speed-time graph when a body is: • at rest• moving at constant speed• moving with changing speed• Interpret and solve problems related to speed-time graphs. From examiner's report, students encounter difficulties is calculation of acceleration and in completing graphs. It is again a very low scoring topic. Low ability students do not manage to score on this topic. The 5th chapter the students on which they are assessed is Electricity with learning outcomes • Identify symbols of electrical components • Show an understanding that current is the rate of flow of charge and use the formula Q = It to solve problems • Measure current using an ammeter• Define potential difference as the work done per unit charge moved between two points

in an electric circuit• Measure potential difference using a voltmeter• Define e.m.f. as the work done per unit charge moved round a whole circuit• Use the formula W = QV to solve problems • Define resistance as the ratio of the potential difference across a conductor to the current flowing through it and use the formula R = V/I to solve problems • Draw electric circuits in series and in parallel using appropriate circuit symbols • Determine the combined resistance of a combination of resistors arranged in series and in parallel • Solve problems related to electric circuits. Electricity at grade 9 is not a complicated topic as such and students are able to recognize the different electrical parts and draw circuit diagrams. This can also be explained by the fact that this topic is covered some weeks before the examination in the 3rd term and still fresh in their memory.

IV. FINDINGS

The tables below show the statistics of performance of students of extended stream since they take part in this National examination.

Grade Achieved							Total Examined	% Pass
Grade	1	2	3	4	5	6	619	123
Number of students	0	0	0	9	27	87		
% pass	0.0%	0.0%	0.0%	1.5%	4.4%	14.1 %		19.9%

Table 1 N530 Science 2021-22 (MES, 2023)

Grade Achieved							Total Examined	% Pass
Grade	1	2	3	4	5	6	754	277
Number of students		1	3	23	65	185		
% pass	0.0%	0.1%	0.4%	3.1 %	8.6%	24.5 %		36.7%

Table 2 N530 Science 2023 (MES, 2023

V. CONCLUSION

The extended stream students are not lost children. Not all students of extended grades at the NCE will pass but there are a few that have the ability to pass Physics, Science and the NCE. The reform caters for these few students who did not start at mainstream but after 4 years reach the level to get their NCE. They then can choose to proceed to grade 10 or other options such as the Bright up programme or even the Technology Education Stream. The start might be slow but each year the percentage passes in NCE and Science has increased. Optimistically the pass rate at Science and NCE can reach up to 50 % within 5 years.

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