

2.2 MARKING OF THE KCPE EXAMINATION

The objective papers in the KCPE examination are machine scored/graded while the compositions are manually marked by examiners. The KCPE examination is a norm-reference examination whereby candidates' scores are standardized to make the scores in each of the subjects have the same weighting.

2.2.1 Rationale behind the Standardization of Raw Marks to Standard Marks

Standardization of Raw Marks to Standard Marks in the KCPE examination is a process that involves adjusting the raw marks for each paper in the examination to allow for differences in difficulty and in the extent to which **marks scatter (standard deviation)**. In this process of standardization, the difficulty among the papers is measured in terms of the **mean raw marks** scored by all candidates, while the differences in scatter are measured in terms of the **Standard Deviation**.

It entails converting the raw marks of each paper in the KCPE examination so that the mean and Standard Deviations of each of the papers are identical. For the KCPE examination, the mean expected of a normal distribution is **50** and the standard deviation is **15**. The formula used for converting the raw scores to standard score is as follows:

$$X_{SD} = 50 + \frac{[X - M]}{SD} \times 15$$

Where X_{SD} = Standard score
X = raw mark obtained by the candidates
M = mean raw mark
SD = Standard deviation of the raw marks

Example:

2.2.1.1 In a paper where the mean raw mark of all candidates is 20 and a Standard Deviation is 10, the standard score for a candidate whose raw marks is 25 would be:

$$50 + \frac{[25 - 20]}{10} \times 15 \approx 58$$

2.2.1.2 In a paper where the mean raw mark of all candidates is 47 and a Standard Deviation is 10 the candidate whose raw marks is 25 would be:

$$50 + \frac{[25 - 47]}{10} \times 15 \approx 17$$

2.2.2 Standard Scores

Standard scores as can be seen from the illustrations above are a measure of relative performance and have the ability to inform on a candidate's performance in comparison to the other candidates. They are essential when results from different papers must be combined to give an overall total, as is the case in the KCPE examination, and are useful for comparing relative performance of a candidate from subject to subject or from year to year. Once the raw marks have been standardized, the cut-off marks for all grades from Grade A to Grade E are identical for all subjects and are therefore maintained at the same level from year to year. The standardized scores are then used for reporting candidates' performance and for selection purposes. When the scores are standardized the relative positions of the candidates remain unchanged; the top candidate in each subject still remains at the top.

Standard scores always convey the exact information as to the position of a candidate relative to other candidates sitting the same examination.

Standard scores are essential if marks from several papers are to be added to give a total score, and it is desired that each paper should contribute equally to the total score.

2.3 THE OBJECTIVE OF THE KCPE EXAMINATION REPORT

The objective of the KCPE Examination report is to form a dialogue between KNEC and the relevant stakeholders in order to enhance candidates' enrolment and performance by providing the indicators of enrolment as well as performance so that the relevant stakeholders can review the targets. The KCPE examination report also informs teachers and prospective candidates of areas of weaknesses for purposes of improvement. It also includes the question papers that candidates sat for in the year 2019 KCPE examination.

This year's report:

- 2.3.1 gives a detailed analysis of candidates' performance in each of the KCPE examination papers;
- 2.3.2 provides the classroom teachers with information about pupils' weaknesses in the course content;
- 2.3.3 provides suggestions on better teaching and learning methods that can enhance performance;
- 2.3.4 gives teachers advice on how they can re-orientate their teaching strategies to enhance pupils' learning and performance.

The year 2019 KCPE examination report therefore highlights those items in which candidates performed poorly and also advances possible reasons for the poor performance. It is hoped that analysis and discussion of difficult items will be helpful to the teachers and the comments given will continue to enrich their teaching methodology so as to enhance students' learning and hence improve their performance.

While the Council presents analysis and discussions of only the poorly performed questions, it is hoped that schools will access KCPE School Specific analysis for all the questions at subject level to assess both the content and the cognitive skills tested for the benefit of teaching their future candidates better.

In determining the performance of candidates, *Item Analysis* is used. Item analysis involves determining the *Facility Index (f-index)* and *Discrimination Index (d-Index)* of each question in the paper for the chosen sample population of candidates. The facility index refers to the relative measure of *difficulty or ease* of a question based on the percentage of candidates obtaining a correct response to a question. The discrimination index on the other hand indicates how successfully a question can sort out the abilities into

different categories ranging from the highest achiever to the lowest one. A good question is considered to be one that has a **Facility Index** of between **30%** and **80%**. Any question therefore with a Facility Index of below 30% is considered to have been found difficult by the candidates and one **above 80% is considered** to have been found easy by the candidates. This is the criteria used by the **Item Analysis programme** to select questions with the low facility indices in a paper for discussion in the KCPE examination report.

Sometimes questions that have a **facility index of 40%** are considered for discussion. Candidates find a question difficult usually because of inadequate coverage of the syllabus content, which makes the candidates unable to tackle the question except by guessing. Candidates will also find it difficult to handle questions that require **higher order thinking abilities** like questions involving **problem solving, evaluation, application** etc. unless they have been taught how to handle such questions.

In the discussions of the questions that candidates performed poorly, a response pattern is given for every question showing the percentage of candidates from the sample population choosing the options to the question. An **asterisk (*)** on an option denotes the correct response to the question and the **Facility Index** of the item is indicated below the correct response. Also under the response pattern, information on the mean mark of candidates in other questions is given. This is the average score on the rest of the items for each group of candidates choosing an option and it is important as it shows the way each group of candidates choosing a specific option scored in the other questions of the paper.

We encourage teachers to offer any comments and/or suggestions that can be considered for inclusion in future issues of the KCPE Examination Report to make them more enriching.

Comments and/or suggestions may be forwarded to us in writing or by completion of the questionnaire found at the end of this report. We would like to thank all those who have given us suggestions and/or comments before on our previous issues of the KCPE Examination Reports.

The Council would like to remind schools and the general public that all past and current issues of the KCPE Examination Report can be purchased from the Kenya National Examinations Council **Mitihani Bookshop** situated on the ground floor of the National Housing Corporation Building. The cost and postage charges of the KCPE Report will be given on request.

2.4 KCPE SCHOOL SPECIFIC ANALYSIS FEEDBACK REPORT

The KCPE Examination School Specific Analysis (SSA) Feedback report is an online feedback report that provides an analysis of how candidates performed in a specific school per subject over the last three years. The online KCPE Examination School Specific Analysis report aims at:

- 2.4.1 providing feedback to each school on the trends of KCPE performance over a period of 3 years;
- 2.4.2 helping individual schools identify areas of weakness in all subjects at the school level;
- 2.4.3 enabling the school to put in place appropriate measures to help improve their learning outcomes;
- 2.4.4 enhancing the use of evidence of the KCPE Examination school specific analysis in decision making processes at the school level;
- 2.4.5 imparting skills on the interpretation and use of the KCPE Examination School Specific examination data;
- 2.4.6 enhancing the teachers' assessment and teaching skills.

It is important to note that each subject has its difficulty level and it is therefore necessary to compare the performance of a specific subject against the National Mean of that particular subject for it to be meaningful to the individual schools. Teachers will interact with the school specific Feedback report and build self assessment skills for their individual subjects and come up with home grown solutions on how to improve performance in their subject areas.

Step by step guidance on how to access the KCPE school specific analysis reports online is provided on the last page of this report.

2.5 APPRECIATION

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Dr Mercy G. Karogo, MBS
Ag. CHIEF EXECUTIVE OFFICER