



MINISTRY OF EDUCATION, GHANA

NATIONAL STANDARDS ASSESSMENT TEST(NSAT)

Operational Plan for the Implementation of the NSAT



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Prepared by
National Council for Curriculum and Assessment (NaCCA)
Ministry of Education

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ACRONYMS

ALP	Accelerated Learning Program
B2	primary school, Grade 2
B4	primary school, Grade 4
BQ	Background Questionnaires
DCF	District Cluster Forum
DDE	District Director of Education
DDSup	Deputy Director in Charge of Supervision
DIF	Differential Item Function
EGMA	Early Grade Mathematics Assessment
EGRA	Early Grade Reading Assessment
EOF	Education Outcome Fund
ESP	Education Strategic Plan 2018-2030
GALOP	Ghana Accountability for Learning Outcomes Project
GES	Ghana Education Service
GPF	Global Proficiency Framework
IRT	Item Response Theory
KU	Knowing and Understanding
MAF	Material Allocation Form
MoE	Ministry of Education
NaCCA	National Council for Curriculum and Assessment
NaSIA	National School Inspection Authority
NEA	National Education Assessment
NMTDPF	National Medium-Term Development Policy Framework
NPLAF	National Pre-tertiary Learning Assessment Framework
NSAT	National Standards Assessment Test
NTC	National Teaching Council
OOSC	Out-Of-School-Children
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
RDE	Regional Director of Education
SDG	Sustainable Development Goal
SEN	Special Education Needs
SISO	School Improvement Support officers
SPAM	School Performance Appraisal Meeting
TA	Test Administrator
TAM	Test Administration Manual
TIMSS	Trends in International Mathematics and Science Study
WAEC	West African Examinations Council

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PREFACE

Objective of the Operational Plan

The purpose of this operational plan is to provide clear and unambiguous processes and procedures for running the National Standards Assessment Test (NSAT). The handbook serves as a reference source of information on NSAT for the National Council for Curriculum and Assessment (NaCCA) and other stakeholders.

Structure of the Operational Plan

This operational plan begins with a general introduction, followed by ten sections and five annexes. Tables and figures have been inserted into some sections to throw more light on the processes and procedures for implementing the NSAT.

SECTION I ABOUT THE NATIONAL STANDARDS ASSESSMENT TEST

1.0 Introduction

Assessment is a management tool used for data collection to improve instruction and to inform policy formulation for quality education. It is one of the three essential components of the process of education. The other two are *Curriculum* and *Instruction*. All three elements of the education process are interrelated. The quality of education is dependent on the attainment of the desired learning outcomes which are reflected in the assessment results.

Assessment of learners is a means to an end but not an end in itself. The data collected from the assessment are used to make decisions about learners' progress, to design or modify programmes, and to facilitate policy formulation to ensure improvement. It is a way of finding out whether teaching and learning outcomes are being achieved and the extent to which learning is taking place. It provides evidence of how the schools are performing, and whether the Ministry of Education is receiving value for money in respect of investments being made.

In recent times the costs of national assessments, the usefulness of the results, and interpretation of school quality based on standard measures have received a great deal of attention around the world. In Ghana, assessment information has consistently indicated severe learning gaps, and this has persisted over the decades (NEA, 2005-2016).

Although the education system does not appear to be improving to an extent envisaged by educational authorities, development partners, and communities, test scores have marginally improved over the years (NEA, 2005-2016; EGRA-EGMA, 2013, 2015). Many intervention programmes have been instituted to bridge the gaps identified by these testing programmes. However, the findings from the posttests have highlighted small attestable gains in learners' attainments.

Learning is key for learners to achieve their full potentials. It is also important for the social and economic development of the country. Thus, stakeholders and the country as a whole need to know how much learners are learning and what they can do with their learning. To improve learning experiences and outcomes, policy-makers need to know how well learners are learning and what needs to be improved.

The quality of education envisaged and provided is ascertained through assessment and evaluation of learners' performance. Deficiencies detected in the learners' performance are communicated to the relevant stakeholders

1.1 The Mandate to Conduct National Learning Assessment

The National Council for Curriculum and Assessment (NaCCA) is the statutory agency of the Ministry of Education (MoE) mandated to develop national curriculum and assessment standards for the pre-tertiary level of education as per the Education Regulatory Bodies Act 2020 (Act 1023).

Ghana's Education Strategic Plan 2018-2030 (pg. 22) mandates NaCCA to create a national standards-based assessment at basic level to measure the quality of learning achievement

before the end of junior high school (JHS) to provide the evidence to allow future interventions in the quality of education delivery to be better targeted.

The Education Regulators Bodies Act, 2020, also enjoins NaCCA to develop a national curriculum, assessment standards and national assessments for pre-tertiary educational institutions.

1.2 Why conduct NSATs?

Collecting and disseminating information on measurable inputs such as physical facilities, learner-enrolments and learner-teacher-ratios in the education system does not tell how much learners have gained from the inputs as reflected in their learning. Rigorous and periodic assessments of learners' learning are necessary to provide evidence of the extent to which the considerable amount of money spent on education has resulted in learning gains.

The National Pre-tertiary Learning Assessment Framework (NPLAF) recommends that a National Standards Assessment Test (NSAT) be used to assess curriculum standards including the 4Rs, knowledge, skills, values and attitudes that are central to the new pre-tertiary education curriculum. The NSAT is responsive to Ghana's Education Strategic Plan 2018-2030, which prioritises improving learning outcomes at all levels by creating a national standards-based assessment at the pre-tertiary level to measure the quality of learning achievement before the end of JHS. According to the ESP 2018-2030, this will provide the evidence to allow future interventions in the quality of education delivery to be better targeted

The National Medium-Term Development Policy Framework (NMTDPF) 2018–2021 also recommends the development of standards for learning and national assessment test for foundational literacy and numeracy competencies at the pre-tertiary level. The NSAT reflects increasing globalization and interest in global mandates. It represents an overall shift in emphasis in assessing the quality of education inputs to learning outcomes. The NSAT is also responsive to some global mandates, (1) SDG4.1.1 and 4.1.2, (2) the UNESCO's Education 2030, Framework for Action, (3) the Global Proficiency Framework (GPF) which call for the administration of a nationally representative learning assessment (i) during basic (ii) at the end of basic and (iii) at the end of lower secondary education.

The NSAT is Ghana's biggest education survey, involving learners in over 20,000 schools. It looks at how Basic 2 learners are acquiring the foundation skills in literacy and numeracy and how Basic 4 and 6 learners are performing on the curriculum content standards in mathematics and English Language.

The basic 2 NSAT is skill-based which reflects the acquisition of foundation skills in literacy and numeracy. The basic 2 tests are made up of closed constructed response items which are orally administered by assessors as in the EGRA and EGMA. Background information will be collected on Basic 2, 4 and 6. Class teachers will also complete a questionnaire.

The basic 4 and 6 NSATs are curriculum-based competency assessment programme that reflects the entire curriculum. The tests are made up of thirty (30) to thirty-five (35) multiple-

choice questions each on mathematics and English language. They are conducted in schools at the end of the academic year.

The OOSC (in the ALP) assessment will follow many of the basic principles of the Early Grade Reading and Mathematics Assessments (EGRA and EGMA). Both literacy and numeracy assessments are made up of series of subtasks covering the aspects of basic literacy and numeracy as reflected in the literacy and numeracy competencies the learners are expected to attain in the Accelerated Learning Programme (ALP).

1.3 What does NSAT Do?

The National Standards Assessment Test (NSAT) is a type of evaluation and has all four attributes of an evaluation:

- Systematic collection of evidence
- Interpretation of evidence
- Value judgment made about what is being evaluated
- Action oriented.

The national standards assessment tests seek to answer the following questions:

- How well are learners learning with reference to curriculum standards?
- How well are learners prepared for life-long learning?
- Are learners achieving a minimum competency or proficiency in English language and mathematics?
- How are learners performing in English language and mathematics as a whole on a national basis?
- Does the evidence indicate particular strengths and weaknesses in learners' knowledge and skills?
- Do particular subgroups in the population perform poorly? For example, between the achievements of (a) boys and girls, (b) learners in urban and rural locations, (c) learners in public and private schools, (d) learners in different regions of the country?
- What factors are associated with learners' achievement? To what extent does achievement vary with characteristics of the learning environment (for example, school resources, teacher preparation and competence, and type of school) or with learners' home and community circumstances?
- Are the national education standards being met in the provision of resources (for example, textbooks, teacher qualifications, and other quality inputs)?
- What proportion of learners in basic 2, 4 and 6 is achieving at least a minimum proficiency level in English language and mathematics, by sex?
- What are the learning gaps that need to be addressed?
- What is the change in English language and mathematics levels of learners from the time of enrolment to the time of completion in ALP?
- What are the learning gains of the learners in the ALP by sex, age?

I.4 Purpose of the National Learning Assessment

The national assessment is designed to achieve the following:

- generate data at the national level on how well learners in Ghana's schools are meeting the standards of the curriculum
- identify what the learning gaps are that need to be addressed
- identify and analyse variations in learner by region, location (urban or rural) sex, and school type (public or private)
- provide information to guide resource allocation
- explore factors that influence learner achievement in pre-tertiary education.
- generate reliable and valid data to inform policy.
- make recommendations for stakeholders to improve educational quality.
- inform teaching and learning process (ESP. 2018-2030, pg.15)
- contribute to strengthening learning accountability (ESP. 2018-2030, pg.15)
- create a national standards-based assessment at primary level to measure the quality of learning achievement before the BECE (ESP. 2018-2030, pg.22)
- provide evidence to allow future interventions in the quality of education delivery to be better targeted (ESP. 2018-2030, pg.22)
- supplement teacher-made assessments to make learner assessment more holistic
- Assess teacher content knowledge through the marking of sample B2 & B4 assessment answer scripts.
- provide information to stakeholders to make strategic choices for improving the performance of all learners irrespective of their characteristics.
- provide a platform for dialogue and evidence-based data for improving instructional techniques, remedial instruction, teacher motivation and improved curriculum review.

For the OOSC in the ALP, it is to:

- estimate the learning gained by OOSC at the of the ALP.
- provide information on the state of literacy and numeracy in the ALP centres.

SECTION 2.0 THE MAIN PLAYERS AND THEIR ROLES IN THE NATIONAL ASSESSMENT

The main elements of the national learning assessment are as follows:

2.1 The Ministry of Education (MoE)

- i. The MoE appoints an implementing agency (NaCCA) and provides funding.
- ii. The MoE determines policy needs to be addressed in the assessment (as espoused in Ghana's ESP 2018-2030, National Medium-Term Development Policy Framework (NMTDPF) 2018–2021 and the National Pre-tertiary Learning Assessment Framework).
- iii. The MoE identifies the population to be assessed (in our case, basic 2 and 4 learners and out of school children (OOSC)).
- iv. The MoE determines the area of achievement to be assessed (English language and mathematics have been selected).
- v. The MOE and other relevant stakeholders review the results of the assessment in light of the policy needs that they are meant to address and determine an appropriate course of action.

2.2 National Council for Curriculum and Assessment (NaCCA)

- i. NaCCA provides overall guidance and helps ensure that the national learning assessment has credibility and value and that key policy questions of interest to the ministry and others are addressed.
- ii. NaCCA defines the areas of competencies and achievement and describes it in terms of content and cognitive skills, using Test Blue Print, test item specification and Test Maps
- iii. NaCCA develops the tests and supporting questionnaires and test administration manuals, and takes steps to ensure their authenticity.
- iv. The tests and supporting documents are standardised by NaCCA and subsequently are reviewed by the steering committee (NaCCA's Subcommittee on assessment) and other experts.
- v. NaCCA selects the targeted sample (or population) of schools or learners, arranges for the printing of materials, and establishes communication with selected schools and districts.
- vi. NaCCA trains test administrators using a test administration manual
- vii. The assessment instruments (tests and questionnaires) are administered in schools on a specified date by test administrators under the overall direction of NaCCA.
- viii. NaCCA takes responsibility for collecting assessment instruments, for scoring, cleaning and preparing data for analysis.
- ix. NaCCA establishes the reliability of the assessment instruments and procedures.

- x. NaCCA carries out the data analysis all by itself or with support from a Technical Assistant (TA)
 - xi. The draft reports are prepared by NaCCA and reviewed by the steering committee.
 - xii. The final reports are prepared by NaCCA and are disseminated to the appropriate authorities.
- (Adapted: Assessing National Achievement Levels in Education. Kellaghan and Greaney, World Bank)

2.3 Ghana Education Service (GES)

GES is a key player in the NSAT. GES owns schools and manages the teachers, SISOs, district and regional directors of education. The success of the NSAT depends to a large extent on GES since it is their teachers, SISOs, and directors who will supervise the conduct the tests in schools under the overall direction from NaCCA. A strong collaboration is needed between NaCCA and GES. In future when the assessment is decentralized, each regional education directorate will do its NSAT with support and guidance from NaCCA. The roles and responsibilities of GES staff are outlined below:

2.3.1 Regional Directors of Education (RDE)

- Responsible for receiving, storing and safeguarding the test materials until districts pick them
- Account for the test materials received
- Make sure that they received the correct number/quantity of test materials for the schools sampled in their region

2.3.2 District Directors of Education (DDE)

- Responsible for the satisfactory conduct of the NSAT in all B4 and B2 classes in his/her district
- Provide enrollment of B6, B4 and B2 classes by school and sex
- Provide names of circuits and SISOs in the District
- Arrange for district trucks to pick up the test materials from regional offices before and after the test administration
- Ensure the security of test materials while in their district to include:
 - while in storage at the district headquarters
 - during Test Administrator distribution and pick up
 - during test administration
 - during the test, materials drop off after the test is over
- Safeguard the keys to the test materials
- Ensure that Test Administrators conduct thorough checks that all information on the top part of each answer sheet is properly shaded

- Ensure timely submission of district-level reports, worked materials and unused NSAT materials to the Regional Director

2.3.3 Deputy Director in Charge of Supervision (DDSup)

- **Before the test**, opens each test materials container with permission from district director to:
 - Check the numbers of test booklets per class against the enrollment figures to ensure a sufficient number of English Language and mathematics test booklets and answer sheets are available on the day of the test
 - If any discrepancies are identified, immediately contact NaCCA representative at the regional education office to quickly resolve the problem
 - Attends three days Test Administrator training session
- **After the test**, opens the test material container with permission from the district director and takes out the secured envelopes with the answer sheets
 - Checks to make sure the correct number of envelopes with answer sheets are included in the test materials container.
 - If not, he/she immediately contacts the Test Administrator to remedy the problem
 - Safely stores the envelopes with answers sheets until NaCCA Representative at the regional office pick up the envelopes
- **As Test Monitor** follows the Test Monitoring protocol to monitor each school unnoticeably and in a standardised manner
 - Returns completed Test Monitoring Forms to the district education office
 - Stores Test Monitoring forms securely until NaCCA Representative picks up the envelopes with answer sheets

2.3.4 School Improvement Support Officers (SISOs)

- School Improvement Support Officers are trained and assigned to schools to serve as Test Administrators
- Attends three days Test Administrator training session
- Reads and masters the content of the Test Administrator Manual
- Administers the NSAT in a standardised and uniform manner

2.3.5 Head Teachers

- Ensures that all pupils turn up on the day of the test
- Prepares the classrooms for the test

- Gives class registers to the Test Administrators on the day of the test
- Could be test administrator for a school other than where he or she heads and posted to by the SISO.
- Attends the three days Test Administrator training session with SISOs

2.3.6 Regional NSAT Coordinator

- Organises testing and liaise with district NSAT coordinators.
- responsible for allocating and delivering materials to the district NSAT coordinators
- Checks the number of materials coming from the central office.
- Responsible for materials returned from schools following test and questionnaire administration.
- Coordinator's office would become the regional NSAT office and the storage facility for assessment instruments.

2.4 Ghana Accountability for Learning Outcomes Project (GALOP)

GALOP is providing funding support to the ministry, procuring technical assistant for NaCCA and providing a team to evaluate the NSAT processes.

2.4.1 The Technical Assistant

The TA will among other things outlined in the Terms of Reference (TOR) for the procurement of a technical assistant, do the following:

- support NaCCA to develop test items for all the learning areas in the curriculum for basic 2 and 4, and ALP
- review and update the tests items developed by NaCCA and then develop additional items to ensure there is a comprehensive set of items for assessing learning outcomes
- review the test items developed under the CBE programme for the operationalisation of the GALOP ALP assessment
- develop an item bank and upload all the items
- quality assure the implementation of the NSATs and ALP assessment
- develop training programmes to build the capacity of NaCCA staff in item development, management, administering, analysing and reporting on large scale assessments
- write project completion report comprehensively documenting the processes, lessons, challenges, and recommendations of the entire technical assistance program
- review the test administration resources and equipment outlined in this document and ensure that they can facilitate test item development,

piloting (trial testing) of test items, finalisation, test administration, scoring and analysing data;

- develop a framework for implementation, monitoring, evaluation, communication and feedback strategies as well next steps for the implementation of the NSATs and ALP assessments
- development and conduct quality assurance protocols of NSAT P2, P4 P6 and ALP assessment

2.5 The West African Examinations Council (WAEC)

Where necessary, assistance will be sort from WAEC to convey test materials from Accra to regional education stores

2.6 NaSIA and NTC

These two agencies will help monitor the NSATs. They will also need the NSAT results in one way or the other in the work they do. For example, the NTC will need the NSAT results to guide their in-service training for teachers.

2.7 Stakeholder Consultation Meeting

Stakeholders are persons or groups who are affected directly or indirectly by the NSATs as well as those who may have an interest in the NSATs or have the ability to influence its outcome, either positively or negatively. Effective project planning is done with the participation of key stakeholders. Early and reiterative stakeholder consultation can help identify:

- key issues and problem areas that need to be addressed
- the degree of local support, concern, and/or opposition to potential interventions
- opportunities for relationship-building and partnerships
- discriminated and marginalized groups that may normally be left out of planning processes.

A stakeholder consultation meeting will be held to create a common understanding of the goals, objectives and implementation procedures of the NSATs among NaCCA and key stakeholders. It is also to promote buy-in right from the beginning of the implementation of the NSATs. Again, it is to provide an effective platform for productive interaction with the potentially affected parties and others with an interest in the implementation and outcomes of the National Standards Assessment Tests.

The stakeholder groups involved are Regional and District Directors of Education (32), Special Education Division, NaSIA (2), NTC (2), MoE (10), GES Head office (5), development partners (8), public relation (PR) officers, colleges of education (10), Basic school Heads (16), Secondary school Heads (5) Parent-Teacher Associations (reps.) School Management Committees (reps.)

2.7.1 The objectives of stakeholder consultation include the following:

- identifying stakeholder priorities to better tailor project activities, opportunities and benefits;
- learning from and incorporating local knowledge to improve project design to avoid and mitigate project-related risks and impacts;
- identifying potential constraints and conflicts that could affect project effectiveness;
- providing a feedback and monitoring mechanism to ensure the project is achieving its intended results,
- providing meaningful access to dialogue and decision-making.
- make all parties clear about the purpose of the national assessment and the uses to which the data will be put,
- define roles and responsibilities for the implementation of the NSATs
- Identify key stakeholders that are affected, and/or able to influence the Project and its activities;
- Identify the most effective methods and structures through which to disseminate information, and to ensure regular, accessible, transparent and appropriate consultation;
- Develops a stakeholder's consultation process that provides stakeholders with an opportunity to influence project planning and design;

2.7.2 Issues to be discussed at the stakeholder consultation meeting

Among other things, the stakeholder consultation meeting will discuss the following issues

1. Why NSAT?
2. Education policy priorities (ESP 2018-2030, NPLAF, SDG4, Education 2030 Framework for Action)
3. Financing
4. Resources
5. Learning areas to assess
6. Test blueprint
7. Assessment instruments (**Learners:** tests, questionnaires; **Teachers:** marking learners' scripts, questionnaires)
8. Sampling
9. Modes of assessment
10. Standardisation of tests
11. Assessor training
12. Accommodation for learners with special education needs (SEN)
13. Test security issues

14. Data collection
15. Data analysis (links with Global Policy Framework)
16. Reporting and Disseminating findings from the assessment
17. Uses of results

SECTION 3 PLANNING THE NATIONAL STANDARDS ASSESSMENT TESTS

Test Planning is an integral component of an assessment process. A planned test ensures that the test is representative of the content and skills to be tested, that is, it measures all the key standards of the curriculum. Therefore, a good test needs to be well planned.

3.1 Developing the Test Blueprint

The basic four (4) and six (6) learners will be assessed in two learning areas, English language and Mathematics.

A team of subject experts will study the curriculum to identify the key standards, define the learning outcomes to be assessed within each domain and specify the weight to be given to each content category. The two (2) tables below show sample test blueprints for basic 4 and 6 Mathematics and English language NSAT.

Table 1 Sample of Literacy Test Blueprint

Domains	Levels of learning			Weighting (%) ²
	KU ¹ (30%)	Applying (30%)	Reasoning (40%)	
Oral Language	2	3	3	8 (23%)
Reading	4	4	5	13(37%)
Grammar usage at word and phrase levels	3	4	4	11(31%)
Writing	1	-	2	3(9%)
TOTAL	10	11	14	35 (100%)

¹KU = Knowing and Understanding; ²Percentages in parenthesis

Table 2: Sample of Mathematics Test Blueprint

Domains	Levels of learning			Weighting (%) ²
	KU ¹ (30%)	Applying (30%)	Reasoning (40%)	
Number	2	2	2	6(17%)
Algebra	3	4	5	12(34%)
Geometry & Trigonometry	3	3	4	10 (29%)
Data	2	2	3	7 (20%)
TOTAL	10	11	14	35 (100%)

¹KU = Knowing and Understanding; ²Percentages in parenthesis

Table 3: Sample of English Language Test Blueprint (Primary 6)

Domains	Levels of learning			Weighting (%) ²
	KU ¹ (30%)	Applying (30%)	Reasoning (40%)	
Oral Language	2	3	3	8 (20%)
Reading	4	4	7	15(37.5%)
Grammar usage at word and phrase levels	5	4	5	14(35%)
Writing	1	1	1	3(7.5%)
TOTAL	12	12	16	40 (100%)

Table 4: Sample of Mathematics Test Blueprint (Primary 6)

Domains	Levels of learning			Weighting (%) ²
	KU ¹ (30%)	Applying (30%)	Reasoning (40%)	
Number	4	2	2	8(20%)
Algebra	3	4	5	12(30%)
Geometry & Trigonometry	3	3	4	10 (25%)
Data	2	3	5	10 (25%)
TOTAL	12	12	16	40 (100%)

The basic two (2) NSAT will also be in English Language and mathematics. Unlike the basic four (4) NSAT, the basic two (2) tests contain closed-constructed response items that are administered orally by an assessor to a single learner (i.e. one-on-one) at a time rather than an entire class. It is designed to measure the most basic foundation skills in literacy and numeracy acquisition.

Table 5 B2 NSAT, Literacy subtasks

Sub-task	(key standards) Skill	No. of Items
1. Oral vocabulary	Vocabulary	8
2. Listening comprehension	Comprehension	3
3. Letter sound identification	Alphabetic principle—letter-sound correspondence	100
4. Decoding	Alphabetic principle—letter-sound correspondence; and Fluency—automatic decoding	50
5. Oral passage reading	Fluency—automatic word reading in context	49-60-word passage
6. Reading comprehension	Comprehension	5

Each sub-task represents a progression of foundational skills that support proficiency in reading and mathematics.

The numeracy assessment contains six sub-tasks that measure a range of mathematics skills, from procedural to conceptual. The sub-tasks are:

Table 6 **B2 NSAT, Numeracy sub-tasks**

Sub-task	Description	Number of Items
1. Number identification	The learner is presented with a series of numbers and asked to say what the numbers are.	20
2. Addition and subtraction level 1 (one-digit addition and one-digit subtraction)	The learner is presented with a series of simple addition and subtraction problems and asked to solve them.	20; 20
3. Quantity discrimination	Learners are presented with two numbers and asked to choose the bigger one	10
4. Missing number identification	Learners are presented with a series of numbers, with one number missing, and asked what number should be there	10
5. Addition and subtraction level 2 (two-digit addition and two-digit subtraction)	The learner is presented with a series of more challenging addition and subtraction problems and asked to solve them	5; 5
6. Word problems solving.	Learners listen to simple addition and/or subtraction story problem and are asked to solve it.	6

The OOSC assessment follows many of the basic principles of Early Grade Reading and Mathematics Assessments (EGRA and EGMA). Both literacy and numeracy assessments are made up of a series of sub-tasks covering the aspects of basic literacy and numeracy competencies that learners are expected to attain in the Accelerated Learning Programme (ALP).

Tables 5 and 6 show the summary of Literacy Assessment Sub-tasks

Table 7 **Literacy Assessment Sub-tasks**

Sub-tasks	Skill
Phonemic awareness	Phonemic awareness of word-initial sounds
Letter sound identification	Letter-sound knowledge
Familiar word identification	word decoding and recognition
Reading comprehension (from silent reading)	Comprehension
Oral passage reading fluency	word decoding and recognition in connected text

Word writing	letter-sound knowledge, letter formation, and word encoding
Creative writing/sentence formation	Creative writing/sentence formation (vocabulary and grammar)

(Adapted: Understanding Complementary Basic Education in Ghana: Endline Report, 2017)

Table 8 Numeracy Assessment Sub-tasks

Sub-tasks	Skill
Number identification: One-digit	knowledge of single-digit number names
Number identification: Two-digit	knowledge of two-digit number names
Missing number	the ability to discern and complete number patterns
Problem-solving: One-digit addition	knowledge and application of basic addition facts; the ability to interpret a situation, make a plan, and solve the problem
Problem-solving: One-digit subtraction	knowledge and application of basic subtraction facts; the ability to interpret a situation, make a plan, and solve the problem
Problem-solving: Two-digit Addition	knowledge and application of basic addition facts to more complex addition problems
Problem-solving: Two-digit subtraction	knowledge and application of basic addition facts to more complex subtraction problems
Problem-solving: Multiplication	knowledge and application of multiplication facts
Problem-solving: Division	knowledge and application of division facts

(Adapted: Understanding Complementary Basic Education in Ghana: Endline Report, 2017)

3.2 Alignment of NSAT to Key Standards

Alignment is a match between the assessment instruments and the curriculum to achieve validity of results. Three types of alignment designs would be adopted: expert review, test curriculum mapping and document analysis.

3.3 Duration and Number of Test Items in the NSAT

The duration of the NSAT test is dictated, among other factors, by:

- the developmental level of the learners - the learners should be able to work within their capabilities and remain focused.

- the complexity of the test items - the test items must be unambiguous.
- the ability level of learners.

In the 2021 NSAT administration, the B2 mathematics and English tests will each be 25-35 minutes in duration and B4 and B6 mathematics and English tests will each be 75-90 minutes in duration. The grade levels of the learners (B2 and B4) are considered in deciding on the number of test items to be administered vis-à-vis the content and cognitive domains to be assessed.

3.4 NSAT Test Format

A variety of test formats have been considered in the selection of an appropriate test format for the B2 and B4 NSAT in terms of:

- The developmental level of the learners
- The ability level of the learners.

Consequently, the selected response (multiple choice) format has been selected for B4 based on the following:

- It has the potential to cover a wide content area of the curriculum.
- It has the advantage of being able to measure both knowledge and understanding of concepts.
- It can be scored within a relatively short period.

The ultimate aim of the test is to inform policy formulation. Therefore, the scoring must be easy, reliable and objective.

Two modes of test administration are proposed for the basic 4 and 6 NSAT. First, using tablets containing the test questions to capture responses from learners. Second, using paper-and-pencil and scannable answer sheets to capture learners' responses.

For basic 2 NSAT, assessors will use tablets containing the test questions to capture responses from learners in one-on-one mode.

For the OOSC assessment, a combination of tablets and pen-and-paper will be used. In part A of the test, assessors will capture responses from learners in one-on-one mode using tablets containing the test questions. Part B will be constructed response items where learners use pen and paper to create their answers.

3.5 Item Writing (B4 and B6 NSAT)

The Standards, Quality Assurance and Assessment Unit of NaCCA develop the test under the supervision of the Director-General of NaCCA with support from a technical assistant. The assessment team first identifies test item writers who are subject specialists and give them orientation on how to write quality test items. Each item writer is given five working days to draft a sufficient number of multiple-choice test items and their scoring guide based

on the learning outcomes and competencies outlined in the test blueprint. Below is a sample test item writing template.

Table 9 *Item writing template*

Content Standard	TEST ITEM	Expected Response(s)/ Key/Answer	Cognitive Level
Indicator			
Item Type			

In drafting the test items, it is advised that the number of draft items should be twice or three times the number of items composing the final test paper. This strategy is adopted to replace test items that may be found unsuitable during the item analysis.

Like TIMSS, the B4 and B6 NSAT is curriculum-based and the test reflects the entire domains of the curricula for B4 and B6 Mathematics and English Language. To compare the NSAT results with international assessments such as TIMSS, PIRLS and PISA, some items will be calibrated using IRT modelling from the sets of released items from TIMSS (grade 4), PIRLS and PISA and added to the B4 items. Some items from previous NEA (20% of items) which align with the current curriculum will be included to serve as anchor items.

The items so developed should be peer-reviewed by the item writers and by external panels of persons not involved in item writing.

3.5.1 Suggestions for Writing Multiple-Choice Items

A. The stem of an item should:

1. be a single, definite task that measures the skill intended.
2. be brief and clear in content and instruction.
3. avoid unnecessarily difficult vocabulary.
4. be grammatical both within itself and to the choices/alternate answers/options.
5. not include material (clues) which automatically determines the correct choice, or which rules out incorrect choices for the item itself or other items in the scale.
6. be presented in a positive form.
7. include any words that must otherwise be repeated in each response.
8. be of an appropriate level of difficulty for the group to be tested.

9. contain appropriate topics or subject matter for the population of interest (e.g., age and culturally appropriate).
- B. Test items must be aligned with the content standard that each item intends to measure. This is a key requirement in item development.
- C. In any ability-measurement situation, test designers must ensure that items are constructed appropriately to target the ability of interest.
- D. Test items must be authentic.

3.5.2 Item Choices, Alternative Answers, Options, and Responses

The response options should:

1. be brief and clear.
2. be parallel in terms of grammar and physical properties with the stem of the item.
3. not overlap or include each other.
4. incorporate only one correct answer or the best answer.
5. have distractors that are plausible and attractive to any examinees who lack the information or ability tested.
6. not give away information or clues to the answer.
7. be appropriate to the item stem.
8. be positioned randomly. alternatively, they can be arranged in increasing, decreasing, or alphabetical order.
9. be similar in length, format, and terms so they do not distract from, or point to, the correct response in unintended ways.

3.5.3 Ways to Make Test Item Distractors Plausible

Distractors should distract the uninformed or misinformed, but they should not result in ‘*trick questions*’ that mislead the knowledgeable learners. For every correct choice, writers will need to construct incorrect choices which have some plausibility to examinees with varying degrees of information or misinformation. The general approaches are:

1. Develop incorrect choices based on known common misconceptions and errors which learners make (e.g., forgetting to convert minutes to hours).
2. Use words that have verbal associations with the test item stem (e.g., politician/political).
3. Use distractors that are homogeneous – that is, similar in structure, form, and content to the correct answer (e.g., all the people listed are famous inventors).
4. Use distractors that are parallel in form and grammatically consistent with the item’s stem.
5. Make the distractors similar to the correct answer in length, vocabulary, sentence structure, and complexity of thought.

3.6 Item writing (Basic 2 NSAT)

For basic two (2), the existing EGRA/EGMA test items will be adapted. The assessment team will first align the items with the basic 2 literacy and numeracy standards-based curricula and develop a scoring guide. The team will then develop stimulus sheets and assessor protocols for the two subjects. Finally, the team will develop learner and teacher questionnaires.

3.7 Item writing (ALP)

The assessment will be based on the instruments developed under the Complementary Basic Education (CBE) program. For OOSC, the existing test items will be reused. These items were written based on a tailor-made curriculum designed specifically for teaching the OOSC enrolled in the Accelerated Learning Program. The test items will be reviewed to ensure that they address the key content and construct level of the ALP curriculum.

3.8 Developing the test administration manual and assessor protocols

To ensure efficiency and limit the number of documents a test administrator has to carry the key information related to the timing of the test, preparing learners, instructions for the administration of the test, packing and returning of tests and questionnaires should be included in one document – the Test Administration Manual (TAM). The TAM is needed to guide and standardise the test administration so that all learners take the test under the same conditions across the country.

The main purpose of the manual is to explain the content of the test, the various tasks the learners are to perform, and how the responses to the questions are to be indicated. It is also to specify the exact conditions under which the test must be conducted, including preparation and procedures required for ensuring test security, sitting arrangement for learners, sharing and collection of test materials.

The TAM should provide information answering each of the following questions:

- What is the test for?
- Which tests are given, which learners are tested, and when are they tested?
- What test materials are needed?
- How should the classroom be set up for the test?
- What preparation is required of the headteacher, the staff and learners to support the administration of the test before the actual administration?
- How should the test be conducted?
- How should test materials be stored?
- Who can be contacted for help to assist with problems or provide additional information?

Also, the manual will describe how learners with SEN will be supported, arrangement for the support and the kind of support to give (e.g., additional time, rest breaks, a reader, a scribe, use of a laptop and adapted papers)

Test administrators will be oriented on the use of the manual. Strict adherence to the instructions and guidelines in the TAM protocols by a test administrator is key to the standardisation of the test administration.

3.9 Finalising the Test Administration’s Manual

Like the test items, the draft manual will be subjected to rigorous editing, which should be done by a person or persons who are knowledgeable in the area of testing. The editing will look at the suitability of the language to the level of the learners, technical inaccuracies, typographical and other errors, logical arrangement of information, clear and complete instructions and use of language that is simple and direct.

Test Administrators (TAs) will use the manual and assessor protocols at the training workshops, when they are piloting the test instruments, and at the general administration of the tests. The findings of the TAs and their comments should be used for reviewing and fine-tuning the manual. It is important, therefore, that the planning and development of the manual be done long before the major training workshop for test administrators begins.

3.10 Developing the background questionnaires (BQ)

Even though the main goal of learning assessment is to improve learners’ learning, it is the use of the assessment information that is key for improving learning. For that to be possible, learning assessment data must be accompanied by contextual data so that factors that impact learning can be identified and action taken.

Background questionnaires should be developed to elicit specific information on the learner’s socio-economic background as well as the learning environment information which can influence learning outcomes.

Questionnaires provide a context for interpreting the test results. They aim to provide a reliable and valid measurement of additional educational constructs, which can inform policy and research in their own right. A good questionnaire collects data about variables for which policymakers want accurate information, variables that they can affect and are willing to influence, and variables that research evidence indicates can affect learner achievement. Considering learning achievement against other socio-economic variables is important in determining policy that directs resources towards certain groups or areas.

Questionnaires will be prepared by the evaluation experts. These will be used to gather information from learners, teachers, headteachers, or parents on variables or factors that might help explain differences in learner performance on the achievement test.

Questionnaires will be pretested and field-tested to establish the suitability of items and response categories. Field-tested questionnaire data will be analysed to refine questionnaire items and produce the final form for administration.

3.10.1 Learner questionnaire

These will include but not limited to the following

- Gender
- Age
- Attendance of class teacher

- Language teacher uses to teach
- Whether learners speak the language instruction
- Teaching approaches, e.g., does your teacher teach you how to read and write in English?
- Attendance to school (such as periods at school and periods away from school)
- Opportunities to attend school
- Family attitudes about the value of school
- Perceptions of classroom environments, such as sense of safety, friendliness of other learners, or support from teachers.
- Home environment, such as access to books, desks, and lights; eating before going to school
- Family background, such as education of parents and language spoken at home
- Attention to homework and study resources provided at home for learners
- Distance from learner's home to school.

3.10.2 Teacher Questionnaire

Teacher questionnaires may include but not limited to the following information:

- Gender and age
- First language
- Teaching conditions, such as class size, access to resources, percentage of students who have textbooks, access to replacement teachers when sick, and assistance with challenging learners
- Educational experience, teacher qualifications, and number of years in this school
- Professional engagement with learning, such as access to and interest in professional development, interest in teaching, and time spent preparing for classes
- Availability of instructional support through classroom visits by headteachers, school inspectors, or supervisors
- Teaching methodology, such as the language of instruction, use of assessment, and style of teaching
- Satisfaction with working conditions, such as tenure, rates of pay, and level of supervision
- Relationship with the school community, such as interactions with parents, involvement in school committees, and participation in local community events
- Distance from teacher's home to school.

SECTION 4.0 PILOT TESTING OF TEST AND NON-TEST MATERIALS

4.1 Pre-piloting of test and non-test materials

Draft items should be pre-piloted in two schools or on fifty (50) learners and then reviewed. The objective is to obtain some initial data-supported information on the suitability of test length and structure, and how items are performing. The pre-pilot would be used to ensure a more effective pilot test to give test participants some capacity-building experience in the process of assembling and administering tests. This will be followed by data entry and analysis.

Test items should be verified by at least one external reviewer to provide quality assurance on the typographical edits, ensure the maintenance of the original item intent, and check response options for the presence of a correct answer.

4.2 Piloting of test and non-test materials

After the pre-piloting, draft test items, questionnaire items, and test administration manuals are fine-tuned and assembled into final draft tests and made ready for pilot administration. Piloting is carried out to ensure that the test instruments are valid and reliable for the purpose for which they are designed. It is also to determine if there are problems with test length and related timing. Additionally, the pilot is important for testing the test administration manual, logistics (e.g., transportation), and other procedures.

Each test item is piloted on 300 learners in high, medium and low performing schools (EMIS classification) with similar characteristics to those that will be taking the final test. If the pilot data collection samples only from a single, select group (such as low-skill learners), there will be uncertainty about how well the test instrument will be able to assess high-ability learners, and even those at the middle range of ability, during the full data collection. For the pilot data analysis to correctly evaluate the test instrument, the sample must resemble the full population of interest as much as possible.

4.3 Finalisation of test items

After pilot test administration and cleaning of all data files, the next step would be to conduct pilot data analysis to determine the statistical quality of the items, which in turn would help determine which items could be included in the operational test form pool.

During the data analysis process, Classical Test Theory (CTT) should be used to compute item difficulty and item discrimination indices as well as Differential Item Functions (DIF), item correlations (pbc), option level means and option level correlation (pbc), all at the test level. At the item level, IRT should be used to determine an item's quality.

The quality of test instruments should be checked by ensuring the following:

- Spelling and typographical errors are removed.
- gender sensitivity
- gender stereotyping is removed

- ethnic balance in the use of names, places, etc.
- wrong use of words is avoided
- eliminate ambiguity
- clear or accurate illustrations are used
- Font size in test booklets is sufficiently large and good for the intended users.
- Adequate spacing is used between lines of text.
- Diagrams are simple, clear and relevant.
- Diagrams are on the same page as the relevant text.
- Careful proofreading, especially of final drafts, can help prevent reprinting of test booklets necessitated by serious typographical or graphical errors

Pilot testing does not take place at the end of an academic year. In the middle of the school year, teachers have not covered all of the content that is measured on the test and therefore learners of a targeted grade are not suitable candidates for taking pilot tests. To avoid this problem, pilot-testing is conducted among learners from a grade above that of the targeted grade. This is inconvenient from a number of respects not least of which is the fact that pilot test performance statistics are obtained from pupils who are not from the targeted grade, and who are not currently being instructed in the content that is measured on the test.

Basic school, grade 3 (B3) , grade 5 (B5) and grade 7 (B7) classes are selected because they are supposed to have completed the B2 , B4 and B6 curriculum, respectively.

4.4 Generating parallel test forms

One operational form of the test will be prepared. From it, nine other parallel forms will be developed to give a total of 10 parallel forms for the B4 and B6 assessment. The types of questions asked on each form are the same, but the questions may appear in a different order in each form with the keys also appearing in a different order. Parallel test forms are considered to be secure exams because each form contains a different arrangement of items and keys thereby enhancing reliability, test security and fairness of the assessment.

For basic 2, the test will be administered orally by the assessors. There will be only one form. Each assessor needs only one stimulus book and a tablet containing the questions. The same is required of the ALP assessment.

Logistics for Test Development

A4 copier paper	Masking tape
Bag envelopes	Rubber bands
2B pencils	Sharpeners
Blue pens	Stapler
Brown envelopes (A4 & A3 size)	Staples (24/6)
Brown paper	Printers
Cello tape (1" and 2")	Toner for LaserJet printers
Erasers	Toner for photocopier
Hard covers	Twine
Markers (indelible sq. tip)	White correction fluid
Laminator	White self-adhesive
Scannable answer sheets	Tablets (1000)
Scanners	Stata software

SECTION 5: TARGET GROUP

5.1 Basic 2, 4 and 6 NSAT

The basic 2 and basic 4 assessments, will be census or population-based. All learners in public basic schools have a 100% chance of taking the test whilst the basic 6 assessment will be sample based involving 35,000 learners across the country.

5.2 The OOSC (ALP)

The OOSC (in the ALP) assessment is sample-based. The test will be administered to a random sample that should be between 6 – 10% of learners across all districts where the programme is operating. The strategy can be described as stratified, multistage, systematic random sampling. This sample design will permit all sampling units to have a known nonzero or calculable chance of being selected. Also, to achieve a sample representative of the population, the random selection of sampling units will be done proportionately to the size and in line with the pattern of the target population.

SECTION 6.0 COST ANALYSIS OF ALTERNATIVE MODALITIES OF ADMINISTERING CENSUS ASSESSMENT

Assessment can be administered to the entire learner population (census-based assessment) or a sample population representative of the entire targeted population (sample-based assessment). Assessing the entire population through national learning assessments has the main advantage of providing every child, parent and school with performance information. Sample assessments do not provide information on individual learners and schools. Their main application is for policymaking.

For sustainability of the census mode of assessment, two (2) ways for administering the NSATs are analysed. For the basic two (2), because a majority of the learners cannot read and comprehend a simple text (source: EGRA-EGMA, 2013 & 2015), oral assessment where assessors read the test to learners and capture their responses on tablets will be more ideal. Sample budget for the basic 2 assessment is shown in **Annex I**.

At basic four (4) and basic six (6), the children should be able to read. Apart from preparing them for the test, they should be able to read the test items and the instructions leading to the different sections of the test.

Two modes of assessment are proposed. First, using tablets containing the test questions to capture responses from learners. Second, using a paper-based test (paper-and-pencil and scannable answer sheets) to capture learners' responses.

A budget will be prepared for each mode of assessment. Considering cost-effectiveness and sustainability of the NSAT the MoE will select one from the two. See **Annex II**

SECTION 7.0 TEST ADMINISTRATION

7.1 Preparation for Test Administration in Schools

7.1.1 Selection of Test Administrators (B2, B4 and B6 NSAT)

The Standards, Quality Assurance and Assessment Unit of NaCCA have a pool of test administrators from the numerous national learning assessment it has conducted. Their number will be woefully inadequate for a census test administration. The standards, quality assurance and assessment unit will have to recruit and train some more test administrators.

The following will be considered as test administrators:

- School Improvement Support Officers (SISOs),
- Teachers who do not teach the targeted classes
- District Examinations and Training officers
- Headteachers who do not manage the targeted schools
- Persons who have administered NEA or EGRA/EGMA before
- Retired teachers
- Other qualified personnel

Potential test administrators should have the following characteristics:

- Good organizational and communication skills
- Experience working in schools
- Reliable, able and willing to follow instructions correctly
- Be trustworthy, responsible, and committed
- Able to operate an android phone or a tablet
- Able to speak and read one Ghanaian language

7.1.2 Selection of Test Administrators (OOSC in ALP)

For improved data quality, data collectors familiar with the ALP study will be used. Relying on previous CBE baseline and endline study data collectors will minimise the amount of additional training needed. In a situation where an adequate number of these enumerators is not accessible, enumerators for EGRA-EGMA could be added and given refresher training.

7.1.3 Responsibilities of the test administrator (NSAT and OOSC in ALP)

Test administrators are to ensure that:

- only learners in the sample take the tests.
- learners understand the procedure for recording their answers.
- teachers do not help learners
- learners do not copy from each other
- learners do not bring unauthorized materials into the room.

- any irregularities before, during, and after testing are noted and reported
- desks are free of books and other materials before testing.
- he/she dictates seating arrangement options.
- teachers and other staff members are not present in the room when tests are being administered.
- all materials are collected when testing is complete.
- other assigned duties are performed

7.1.4 Trainers of Test Administrators

The Standards, Quality Assurance and Assessment Unit of NaCCA have a cadre of trainers of test administrators for the NSAT. Nevertheless, as the programme expands and some trained test administrators either retire or are moved on to other schedules, many more test administrators will have to be recruited and given adequate training alongside their colleagues who, from time to time, will need to be updated.

7.1.5 Test Administration Training

The Test Administrator plays a very important role in ensuring the validity and reliability of the test results.

The training programme should be planned and designed in advance of the actual training to allow more time for those concerned to prepare, as well as for the necessary materials such as scannable answer sheets, the test administrator’s manual, coded school forms, test administrator posting forms, and other items to be procured.

The test administration training programme should include the following:

1. overview of the NSAT and OOSC Assessment
2. discussion of Test Administrator’s Manual and Assessor protocols
 - test materials for both Mathematics and English Language
 - ensuring the security of test materials
 - the seating arrangement of learners
 - handling learners who arrive late/latecomers
 - handling learners who complete tests early
 - preparing learners for the tests (Mathematics and English Language)
 - preparing learners in the use of the answer sheets/tablets
 - arrangements for learners with SEN accessing NSATs
 - accommodating learners with SEN in the assessment
 - sharing of test booklets, answer sheets and other materials to learners
 - practice administration of NSAT in peer groups

CONTRIBUTORS

Name ²⁸ NSAT Operational Plan	Designation
Prof. K. O. Kwarteng	University of Cape Coast; Council Chair, NaCCA
D. E. A.	UGC

- group reporting of practice administration at plenary sessions
- post-test administration activities: Preparing test materials for retrieval at the appropriate time and place
- confirmation/updating of sample school enrolments
- assignment of test administrators to schools.
- discussion of background questionnaires
- practise the use of tablets/scannable answer sheets to capture responses of learners
- roles and responsibilities of Directors of Education at the regional and district levels

7.1.6 Printing of Operational Test Materials

To determine the number of test booklets to print for each test form, the number of pupils taking the test should be divided by the number of test forms (1 for B2 assessment, 10 for B4 & B6 and 1 for OOSC) plus extra copies determined by the overage factor. The overage factor is the percentage of extra copies that need to be printed to cover unexpected shortages (e.g. from misprinted booklets). For NSAT 2021, an overage factor of 20% will be used.

The printing of the test booklets and non-test materials is given on contract immediately after the items are finalized and the operational forms are generated. This should be done, preferably by the beginning of March of the testing year. Scanners, scannable answer sheets and other logistics are also procured alongside the printing of the test booklets and non-test materials. An overage factor should be applied to all items.

7.1.7 Allocation, packing and haulage of test materials

Packing should begin soon after the printing of test instruments. Pack region by region beginning with regions farthest from packing centre. A set of packing procedures should be established and documented. Packing should be guided by packing checklist or Material Allocation Forms (MAFs). All materials allocated to a school should be recorded on one of these forms. This is to forestall any shortages in the allocation of materials. Packers should be very meticulous in the use of MAF. Each school should have three copies of the form. One accompanies the materials to the District Office as a checklist to check the quantity and type of test materials sent to the district and schools. The second copy is left at the regional education office and the third copy left with NaCCA. Packing of test materials should be done carefully such that adequate test materials are received at the schools on time.

The NSAT coordinators at the district offices should organise the test materials so that it is convenient for the test administrators to transport the materials to the schools, administer the tests, and secure the materials whilst at the schools.

For schools that have higher enrolments, the recommendation is to pack test materials into a bigger container or separate security containers. Do not overload

the security containers with materials to ease the burden of lifting, transporting and distributing the materials for test administrators. Label each security container appropriately (i.e., region name, district name, school name, school code, and grade) to avoid swapping of materials to regions, districts or schools.

Pack answer sheets by sandwiching them between two hard paper cards and tie them with a rubber band to avoid crumpling. Packing should be based on class enrolment. Label an answer sheet envelope with the region name, district name, school name, school code and grade, and test subject before putting the answer sheets inside. Create an answer sheet envelope label for each test subject and grade. Also, it is best to create a spare envelope label that does not indicate test subject or grade. This label will be placed on the spare answer sheet envelope sent to schools.

Review and check all the test materials needed for each school using the MAFs placed on top of the security bag. If all the materials are present, then put the materials inside a security bag and place one copy of the MAF on top of the materials in the bag. Secure the bag using padlocks to avoid unnecessary access to the materials in the bag. The packaged material should be hauled by trucks to regional education depots.

The regional NSAT coordinator should inform district education offices to retrieve their testing materials from the regional depot. The coordinator issues out materials to districts using a checklist. Below is a sample of MAF

Sample NSAT School Material Allocation List

Region:

District:

School Name:

School Code:

No. of Security Bags:

No. of Padlocks:

Padlock Keys and Envelope:

B4: Learners	Learner Enrollment Count	✓	Monitors	Monitor Enrollment Count	✓
Math booklet Form #1-10			Monitoring forms:		
English booklet Form #:1-10					
Bubble answer sheets (2-sided)			Envelopes:		
Pencils:			Hard Covers		
Erasers:			Rubber band		

Sharpeners:					
Rubber bands:					
Hard covers:					
Math answer sheet envelope:					
English answer sheet envelope:					
Daily assessment form:					
Spare answer sheet envelope:					
B4 English/Listening Text (TA) Form #: 6					
B4 English/Listening text (TA) Quantity: 1					

Individual school MAF can be merged on a spreadsheet to create regional allocation form. See a sample at **Annex IV**.

7.1.8 Informing schools

The 2021 NSAT will be a census, involving basic 2 and 4 learners whilst the basic 6 will be sample-based across the country. All schools will be given provisional dates of the test administration through the Ministry of Education and the Ghana Education Service.

A reminder note which gives details about the actual assessment exercise and the exact date of test administration will reach the schools about a month before testing.

Each district and each school will appoint a contact person or coordinator for the assessment. The district directorates will remind the schools two weeks before the test and again a day before the event.

7.2 Test Administration in Schools

The tests will be conducted in schools close to the end of the academic year by a team of trained Test Administrators (TA) and monitors. Test administration in schools is under the control of the District Education Directorates. Details of how the tests will be conducted in the classrooms are outlined in the test administration manual.

Logistics for Test Administration

ITEM (B2 & B4)	QUANTITY
1. A4 paper	500 boxes
2. Blue pens	150 boxes
3. Brown A4 envelopes	200 packs
4. Brown A3 envelopes	200 packs
5. Brown paper	20 packs
6. Carrier bags	1000 pcs
7. Cello tape (1" and 2")	30 pcs each
8. Erasers for both EOF& NSAT (P2&B4) -- packs of 50	24,960
9. Hard covers (paper)	100,000
10. HB pencils for both EOF & NSAT (P2,B4) -- packs of 12	104,000
11. Laminating machine	2
12. LaserJet Printers (2035)	5
13. Markers (indelible sq. tip)	20 boxes
14. Masking tape	20 pcs
15. Packing tape	20pcs
16. Print cartridges	5
17. Printing of English test booklets (B4)	600,000
18. Printing of math test booklets (B4)	600,000
19. Printing of stimulus sheets and Assessor protocols	8,600
20. Printing of test administration manual	7,000
21. Punch	5 pcs
22. Rubber bands	50 packs
23. Scannable answer sheets (B4)	1,300,000 pcs
24. Scantron scanners	5
25. Scissors	5
26. Sharpeners	200 packs
27. Stapler	10 pcs
28. Staples (24/6)	10 packs
29. Tablets for the EOF assessment (B2&B4)	8,600
30. Toner for LaserJet printers (05A)	15
31. Toner for photocopier	5
32. Twine	1 box
33. White correction fluid	20
34. White self-adhesive	20 packs

B6: Logistics for item writing, piloting & Test Administration	QTY
Toners	5
Pencils	40,000
Eraser	40,000
Pens (2 boxes)	20
Sharpners (packs)	300
Brown A4 envelopes (packs)	300
Brown A3 envelopes (packs)	120
Brown paper(packs)	20
Stapler	10
Markers	30
Punch	5
Rubber band (packs)	50
Paper Hard Covers	5000
Cello tape (1" & 2")	50
Laminator	4
A4 paper (boxes)	100
White self-adhesive (packs)	10
Twine	2
Stata software	2
security bags	1800

7.2.1 Accommodation for Learners with SEN

Accommodation plays an important role in educational settings, particularly for learners whose disabilities interfere with performing assessment tasks (such as getting through the items in a test within the time limit or filling in the circles on a multiple-choice test) or learning tasks (such as reading a book, taking notes in class, or writing an essay).

Testing accommodation is one of the main methods for increasing participation of learners with SEN in national learning assessments.

The headteachers may be requested to answer these questions by stating **yes/no** to enable the assessment team plan for right accommodations for affected learners:

- Does the learner have a visual impairment that requires large-type or Braille materials?
- Is the learner able to read and understand directions?
- Does the learner need directions repeated frequently?
- Has the learner been identified as having a reading disability?
- Does the learner have low/poor reading skills that may require the reading of tests or sections of the tests that do not measure reading comprehension to demonstrate knowledge of subject areas?

- Does the learner have a hearing impairment and need a listening device, or that requires an interpreter to sign directions?
- Does the learner have difficulty tracking from one paper to another and maintaining his or her place?
- Does the learner have a disability in recording his/her responses in the standard manner?
- Can the learner use a pencil or writing instrument?
- Does the learner need the services of a scribe?
- Can the learner work continuously for the length of time allocated for standard test administration?
- Does the learner use other accommodations or adaptive equipment which require more time to complete test items (e.g., use of scribe)?
- Does the learner get tired easily due to health impairments?
- Does the learner have a visual impairment that causes eyestrain and require frequent breaks?
- Does the learner's attention span and/or distractibility require shorter working periods and frequent breaks?
- Does the learner have a learning disability that affects the rate at which he/she processes written information?
- Does the learner have a motor disability that affects the rate at which he/she records written responses?
- Does the learner take any type of medication to facilitate optimal performance?
- Do others easily distract the learner and/or does he/she have difficulty remaining on task?
- Does the learner require any specialized equipment or other accommodations that may be distracting to others?
- Does the learner have a visual or auditory impairment that requires special lighting or acoustics?
- Can the learner focus on his/her work in a setting with large groups of other learners?
- Does the learner exhibit behaviour that may disrupt the attention of other learners?
- Do any physical accommodations need to be made for the learner in the testing room?

Where a learner with SEN can access the NSATs, one or more of the following arrangements will be put in place to support them:

- Additional time

- Rest breaks
- A Reader
- A scribe
- Use of a laptop
- Adapted papers

All accommodations for use by learners in the national learning assessment must be requested by head teachers on behalf of the learner and must be documented in the learner's current IEP and be on the list of allowable accommodations.

7.2.2 Security of Test Materials

Everyone involved in the implementation of the NSAT has a responsibility to safeguard all test materials. Test booklets and answers sheets must be secured at every stage of the implementation plan:

- from the time the test materials are delivered to NaCCA offices for packing and assembly,
- through the distribution process to regional offices, district offices, and schools and
- return distribution from schools to district offices, regional offices and then finally to NaCCA offices.

SECTION 8 ORGANIZING DATA FOR ANALYSIS

8.1 Preparing Data for Analysis

The NSAT will generate two (2) types of data for analysis: Learner testing data and questionnaires.

Immediately after the NSAT administration, all answer sheets (in their envelopes), questionnaires and other test and non-test materials should be sent by the district NSAT Coordinator to the regional NSAT Coordinator. The regional NSAT Coordinator receives these materials using a checklist. The answer sheets are then separated from the other materials.

A team of trained personnel will clean the answer sheets and prepare them for scanning. By preparing the answer sheets, the team will look at each bubble sheet, intensify shaded bubbles that look faint and transcribing shaded bubbles on crumpled answer sheets onto a fresh answer sheet.

Scanning should be done at the regional level by trained personnel and supervised by NaCCA staff. It is advised that scanners that can scan at least five thousand (5,000) answer sheets per hour should be procured to ease the work of those going to scan. For training and research purposes, the scanners should be programmed to pick the A, B, C, D, responses that learners produced.

A team of trained personnel will enter the data from the different questionnaires (learners and teachers) to be used for further analysis. This should be organised at the National level.

8.2 Basic 4 and 6 NSAT Data Analysis

The A, B, C, D, responses that learners produced are first scored and then the other processes follow.

Key policy questions that will guide the analyses include the following:

- Are learners achieving a minimum competency or proficiency in English and Mathematics?
- How are learners performing in English and Mathematics as a whole on a national basis?
- Do particular subgroups in the population perform poorly?
- Do disparities exist, for example, between the achievements of (a) boys and girls, (b) learners in urban and rural locations, (c) learners in public and private schools, (d) learners in different regions of the country?
- What factors are associated with learners' achievement? To what extent does achievement vary with characteristics of the learning environment (for example, school resources, teacher preparation and competence, and type of school) or with learners' home and community circumstances?
- Are the government standards being met in the provision of resources (for example, textbooks, teacher qualifications, and other quality inputs)?
- What proportion of learners in grade 4 are achieving at least a minimum proficiency level in reading and mathematics, by sex?
- What are the learning gaps that need to be addressed?
- What is the country's mean score in mathematics and English language?
- What percentage of students reached the minimum proficiency level in reading?
- What percentage of students answered correctly specific items in the test?
- Did results improve compared to the previous assessment?
- What are the psychometric properties of the NSAT?

Having identified key policy questions that will guide the analyses, the following parameters will be computed:

- 1 Overall average percent correct, by English and Mathematics
- 2 Percentage of learners achieving proficiency in English and Mathematics
- 3 Mean percentage of items correct in mathematics and English language, by sex
- 4 Percentages of learners achieving proficiency in mathematics and English language, by sex
- 5 Mean percentage of items correct in mathematics and English language, by school location

- 6 Percentages of learners achieving proficiency in mathematics and English language, by school location
- 7 Mean percentage correct scores by domain in mathematics
- 8 Mean percentage correct scores by domain in English language
- 9 Mean percentage of items correct, by school type
- 10 Percentages of learners achieving proficiency levels, by school type
- 11 Mean percentage of items correct, by deprived and non-deprived district status
- 12 Percentages of learners achieving proficiency levels, by deprived and non-deprived district status
- 13 Mean percentage of items correct, by region
- 14 Percentages of learners achieving proficiency levels, by region
- 15 Mean percentage of items correct in mathematics and English language, by school
- 16 Percentages of learners achieving proficiency levels in mathematics and English language, by school
- 17 Secondary data analysis using the questionnaire data and learners test scores
- 18 Psychometric analysis such as item analysis, reliability, validity, bias analysis, item difficulty, etc.

8.3 The ALP Data analysis

For the OOSC assessment, there will be a baseline and an endline. The analysis will among other things compare the learning gains of the learners by sex, age, wealth, geographical regions, languages, and implementing partners (IP). It will also assess the change in literacy and numeracy levels of learners from the time of enrolment to the time of completion in ALP.

The following should also be computed:

1. Mean percent scores, overall
2. Mean percent score baseline by subtask
3. Mean percent score endline by subtask
4. Change in mean percent score (percentage points) by subtask
5. Mean percent zero scores (baseline, endline and reduction)
 - Baseline percent zero scores (%)
 - Endline percent zero scores (%)
 - Change in percent zero scores (percentage points)

Zero scores are the percentage of learners who are unable to correctly answer a single item on a given subtask. Examining both decreases in zero scores and increases in mean percent scores allows for a more complete understanding of average learning gains as well as improvements for learners at the lowest end of the achievement spectrum.

There could be a very high correlation among implementing partners, region, and languages and it will be very difficult to disentangle the three. Comparing learner's performance

across implementing partners will be ideal in a project like the ALP. The following should be computed:

- Overall Literacy Score gains disaggregated by Implementing Partner and region
- Overall Numeracy Score gains disaggregated by Implementing Partner and region

Determine also the proportion of learners in each proficiency level

- Overall numeracy scores by proficiency level, at baseline and endline
- Overall literacy scores by proficiency level, at baseline and endline
- Overall component scores by proficiency level, at endline
- Component score changes, by proficiency level and gender

The proficiency levels are:

- Non-Performer (Zero Scores)
- Beginner (>0-50)
- Approaching Proficiency (50-80)
- Proficient (>80)

8.4 Basic 2 NSAT Data Analysis

The analysis should be done subtask by subtasks. It could be done along these paths.

1. Mean percentage corrects for all subtasks
2. Percentage correct of the number of questions attempted in the subtask
3. Percentage correct out of the total number of questions in the subtask
4. Percentage zero scores for each subtask
5. Number identification – mean score and percentage of pupils scoring zero, by district type, urban/rural status, and male/female
6. Item-level performance on the addition level 1 subtask
7. Item-level performance on the subtraction level 1 subtask
8. Addition level 1 – mean score and percentage of pupils scoring zero, by district type, urban/rural status, and male/female
9. Subtraction level 1 – mean score and percentage of pupils scoring zero, by district type, urban/rural status, and male/female
10. Quantity discrimination – mean score and percentage of pupils scoring zero, by district type, urban/rural status, and male/female
11. Missing number – mean score and percentage of pupils scoring zero, by district type, urban/rural status, and male/female
12. Item-level performance on the missing number subtask item-level performance on the addition level 2 and subtraction level 2 subtasks

13. Addition and subtraction (level 2) – mean score and percentage of pupils scoring zero, by district type, urban/rural status, and male/female
14. Item-level performance on the word problem subtask
15. Word problems – mean score and percentage of pupils scoring zero, by district type, urban/rural status, and male/female
16. Data analysis using the questionnaire data and learners test scores
17. Psychometric analysis

SECTION 9 NSAT REPORT WRITING

The reports will provide stakeholders with a clear description and meaningful interpretation of the findings to improve the receipt and use of the data. Appropriate reporting templates should be developed for the school, district and regional levels. Different reports such as technical, performance would be provided. Thus, the report should include:

1. Background information to support the interpretation of results. For example,

Why	Aim, purpose and context of the assessment
Who	The learners involved (B2, B4 and B6)
When	Assessment cycle, timeframe
What	Assessment framework and instruments (cognitive and contextual), proficiency scales (cognitive and contextual), proficiency scales and levels
How	Methodology and procedures (who is doing what)

2. Description and interpretation of results would be guided by the publication type, the audience and the importance of the information. Support statements in the reports with other research findings. Explain graphs, tables, technical terms and provide readers with information on how to interpret the results.
3. Acknowledgement of limitations of the assessment: What can affect the assessment results should be clearly stated.
4. Conclusions are drawn from the assessment: These should be based on the reported findings.
5. Recommendations: These may suggest specific policy options or strategies that decision-makers and other stakeholders would adopt in response to identified issues.

SECTION 10 DISSEMINATION OF NSAT RESULTS

The main aim is to share and support the understanding of the assessment and its findings in response to the policy goals defined for the assessment program. This constructive feedback would help validate assessment results, promote confidence in the national assessment, foster system growth and allow stakeholders to set goals and discuss the best course of action to use to improve the system. When feedback is neglected it tends to limit and sometimes destroy entirely the usefulness of an assessment.

The dissemination will be done at four levels:

10.1 Ministry level

The key policymakers in education at the ministry level would be informed of the findings of NSAT, obtain their comments and support for further dissemination. Flyers, brochures, posters and summary reports that focus on the main findings may be ideal dissemination products to communicate brief messages.

10.2 District Level

This is dissemination to education practitioners at the district level. This is to afford the education practitioners internal to the education system the first-hand information on the outcomes of the learning assessment conducted. This will be done through what is called 'district cluster forums' (DCFs).

For effective and efficient dissemination, the districts will be categorized into groups/clusters. A cluster contains a minimum of 3 districts and a maximum of 5. Each cluster of districts will attend a one-day forum. There will be 50 dissemination forums at the district level with a maximum of 4,400 participants. Each cluster dissemination forum will be made up of an average of 88 participants. Key participants may include DEOC, School Improvement Support Officers (SISOs), District Training Officers, District Coordinating Directors, Conference of Heads of Basic Schools (COHBS), Professional Learning Communities (PLC) Leads, Mathematical Association of Ghana (MAG) and Ghana Association of Teachers of English (GATE).

The 4,400 participants across the country are shown in the buildup below.

- 260 Head teachers
- 780 PLC Leads
- 260 District Directors
- 260 District Training Officers (DTO)
- 1,800 School Improvement Support Officers
- 260 Deputy Directors in charge of supervision
- 260 Coordinating Directors from the Assemblies
- 520 Representatives of MAG and GATE

Table 3 shows the categories of participants per district for the DCF

Table 4 Categories of participants per district for the DCF

Participants	Number
1. District Director	1
2. District Training Officer	1
3. Deputy Director, Supervision	1
4. Chairman, COHBS	1
5. School Improvement Support Officers (SISOs)	As per district
6. District Coordinating Director	1
7. PLC Leads	3
8. MAG	1
9. GATE	1

At this level, summaries of the school, districts, regional and national reports would be distributed and discussed.

The message for the dissemination will be carried out through

- Power point presentations
- Group discussions using report summaries should focus on the following areas:
 - Learners strengths and weaknesses.
 - Possible causes of the challenges.
 - Plenary on group discussions.
- Subject matter Specialists (Facilitation Assistants) will examine the indicators and exemplars of the challenging domains (Mathematics and English) to find out what the challenges are and discuss with participants ways to overcome those challenges
- Districts will create and develop low cost or no cost implementable action plans based on the results.

Headteachers and teachers will implement the action plans. SISOs will support schools to implement action plans. District Directors and Deputy Directors Supervision will monitor the implementation. NaCCA and GES will monitor and collate information on the implementation. Local Government and Metro/Municipal/District (MMD) Assemblies will be encouraged to financially support Metro/Municipal/District Education Offices to implement the action plans.

After the DCF each district education directorate should organise district and school level SPAMs to explain the results to learners, teachers and parents. It should also be discussed at PLC and CPD meetings.

10.3 Regional Level

Results of the assessments are also reported to the general public; media, NGOs, CSOs, Ghana Federation of Disability Organisations (GFD) and other organisations, for accountability.

Organize ten (16) regional forums soon after the district level dissemination. In each region, there will be one forum at selected venues. Each forum will have a minimum of 70 participants. These forums should be organised by regional education directors and facilitated by NaCCA

Regional level dissemination should target education policy advocates, the business community, parents, the general public, media outlets, community members, school board members, cultural institutions, Teacher Unions, Parent-teacher associations (PTA), Subject Associations and Principals of Colleges of Education in the region where the dissemination takes place.

The message for the dissemination should be carried out through

1. Report briefs or flyers
2. Power point presentations
3. Dialogue walk after the presentation where participants reflect on what they have seen
4. Group discussions based on learners' performance
5. Plenary presentation by group leaders

10.4 Media – Publicity, Adverts (Radio, TV, web)

The use of media publicity and adverts is to create greater awareness among the citizenry and mobilize the support of other stakeholders such as religious bodies and opinion leaders.

Media reports contain all the information needed to communicate the results to a wider audience, including key messages, graphs and tables. Websites, videos, blogs and social media, press releases, special reports for radio and television which engage the general public are also important communication channels.

10.5 National Policy Forum

This brings together other stakeholders such as development partners, Members of Parliament, the Academia, members of the National House of Chiefs. To minimize cost, this forum should incorporate the regional level forum of Greater Accra.

10.6 Evaluation of the Dissemination

Monitoring and Evaluation Specialists should be hired to assess the effect of the dissemination activities. Rapporteurs should also be hired to compile all information gathered at the various forums. These feedbacks are useful for implementation of subsequent activities in the future.

10.7 Use of the NSAT Results

The ultimate goal of assessment is to improve learner's learning, the quality of educational policy and decision making. The NSAT results will be used both summatively and formatively. Summatively to:

- provide feedback to policymakers about the state of the education system and accomplishment of learning goals,
- monitor learning trends at the system level,
- inform educational policies and practices,
- provide information to aid resource allocation and targeted intervention,
- hold schools accountable by reporting assessment outcomes to stakeholders internal or external to the education system
- frequently monitor and evaluate the education system
- influence policy and practices from what happens in the classroom to large scale changes and investments by education ministries
- support international discussions on improving education quality

Formatively, the NSAT will be to develop and improve the learner;

- to enhance teacher professional development
- offer the basis to design remediation and support for learners
- provide pedagogical support to educators due to weak assessment culture in the schools

ANNEX I Budget Summary for Primary 2 NSAT

Expense Items	Cost (GH¢)	
Aligning and Reviewing Ghana EGRA_EGMA test items	36,250.00	
Review of test administration protocols	16,800.00	
Logistics for item writing, piloting & Test Administration	609,500.00	
Test Item Piloting	137,750.00	
Analysis, Finalization of test items and administrator manuals and assembling of Operational Test forms	32,250.00	
Training of Assessors for Test administration	11,696,250.00	
Test Administration	35,776,000.00	
Monitoring of Test Administration	1,968,000.00	
Data Analysis and Report writing workshop	124,100.00	
TOTAL	50,396,900.00	
Miscellaneous (5%)	2,519,845.00	
GRAND TOTAL	52,916,745.00	\$9,313,049.10

ANNEX II Budget Summary for Primary 4 NSAT

Expense Items	Cost (GH¢)
Test frameworks: - Blue Print and Item Specification tables Development	12,500.00
Item Writing	40,400.00
Development of test administration manual	21,000.00
Pre-testing of items	10,400.00
Logistics for item writing, piloting & Test Administration	4,298,500.00
Test Item Piloting	145,000.00
Analysis, Finalization of test items and administrator manuals and assembling of Operational Test forms	31,700.00
Training of Assessors for Test administration	5,510,700.00
Printing of operational test booklets	7,331,000.00
Test Administration	5,620,000.00
Monitoring of Test Administration	4,125,000.00
Data Analysis and Report writing workshop	81,900.00
TOTAL	27,228,100.00
Miscellaneous (5%)	1,361,405.00
GRAND TOTAL	28,589,505.00
Amount in US Dollars	5,015,702.63

Budget Summary for Primary 6 NSAT

Expense Items	Cost (GH¢)
Test frameworks: - Blue Print and Item Specification tables Development	12,700.00
Item Writing	42,400.00
Development of test administration manual	10,500.00
Orientation for NaCCA staff, GES, NaSIA, NTC and MoE	15,500.00
Logistics for item writing, piloting & Test Administration	369,420.00
Test Item Piloting	43,900.00
Analysis, Finalization of test items and administrator manuals and assembling of Operational Test forms	40,900.00
Training of Assessors for Test administration	1,034,100.00
Printing and Distribution of operational test booklets and Test Administration	975,000.00
Monitoring of Test Administration	118,100.00
Cleaning, Scanning, Data Analysis and Report writing workshop	114,600.00
TOTAL	2,777,120.00
Miscellaneous (5%)	138,856.00
GRAND TOTAL	2,915,976.00
Amount in US Dollars	511,574.74

ANNEX III Budget for ALP

EOF COMPONENT 4 BUDGET

Item	Year 0 (2019/20)	Year 1 (2020/21)	Year 2 (2021/22)	Year 3 (2022/23)	Year 4 (2023/24)	Year 5 (2024/25)	Total (USD)
TA, Nat. assessment / test item development & piloting		170,000					170,000
Mainstream – P2 (1,200 schools)			660,000		660,000		1,320,000
Mainstream – P4 (1,200 schools)					400,000		400,000
OOSC learning evaluation (~60K rural, 10K urban OOSC)		260,000	260,000	260,000			780,000
Other payment metrics (assessment or verification)		100,000	100,000	100,000	100,000	100,000	500,000
EOF management unit		250,000	150,000	150,000	150,000	150,000	850,000
EOF Team TA		202,000	136,000	137,000	137,000	208,000	820,000
Capacity Building							90,000
OOSC data collection/School selection		70,000					70,000
TOTAL							5,000,000

ANNEX IV Regional Material Allocation Spreadsheet

Region	School_code	District	School name	en_4	P4 Math Booklet (1-10)	P4 English booklet	P4 English Booklet form #	P4 English (TA) form #	P4 English (TA) Quantity	Answer Sheets (P4)	Pencils (P4)	Erasers (P4)	Sharpener (P4)	Rubber Bands (P4)

Merge with the above

Hard Covers (P4)	Math Answer Sheet Envelope (P4)	English Answer Sheet Envelope (P4)	Spare Answer Sheet Envelope (P4)	P4 Daily Assessment form	Monitoring Forms	Monitoring Envelopes	Monitoring hard covers	Monitoring rubber bands

ANNEX V Primary Four (4) National Standards Assessment Test 2021 Timelines

- preparing learners in the use of the answer sheets/tablets
- arrangements for learners with SEN accessing NSATs
- accommodating learners with SEN in the assessment
- sharing of test booklets, answer sheets and other materials to learners
- practice administration of NSAT in peer groups

CONTRIBUTORS

Name	Designation
Prof. K. O. Kwarteng	University of Cape Coast; Council Chair, NaCCA
Dr. Eric Anane	UCC
Dr. Paul Butakor	UG - Legon
Dr. Ruth Annan Brew	UCC
Emmanuel Acquaye	NaCCA Council
Anang John Mensah	Ag. Head, Curriculum Directorate, NaCCA
Gladstone F. Agbakpe	NaCCA
Moses J.Y. Gemeh	NaCCA
Abigail Owusu Oduro	NaCCA
Alhaji Seidu Mahama	NaCCA
Joana Vanderpuiye	NaCCA
Joachim Seyram Honu	NaCCA
Mercy Nyamekye	Ag. Head, Research, Monitoring & Evaluation NaCCA
Bridget Anku (Mrs.)	NaCCA
Anita Collison	NaCCA
Veronica Odom (Mrs)	NaCCA
Genevieve Mensah	NaCCA
Reginald Quartey	Ag. Head, Instructional Resources Directorate, NaCCA
Mrs. Clara Anumel	Fmr Director, NEAU-GES
Mr. Fred Brinkorang	GES
Richard Annan	UCC

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