

REPUBLIC OF GHANA

**CONTRACT AGREEMENT
GR/MOE/SS/BSTEM/04/18**

FOR THE

**SUPPLY AND INSTALLATION OF EDUCATIONAL EQUIPMENT AND
TRAINING IN BASIC SCIENCE, TECHNOLOGY, ENGINEERING &
MATHEMATICS EDUCATION (BSTEM)**

BETWEEN

**MINISTRY OF EDUCATION
P.O. BOX M45, ACCRA**

AND

**ITEC GLOBAL
THE MANSE 28 GEORGE STREET LUTTEWORTH LE 17 4EE UK**

DECEMBER, 2018

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CONTRACT AGREEMENT

CONTRACT NO.: GR/MOE/SS/BSTEM/04/18

**SUPPLY AND INSTALLATION OF EDUCATIONAL EQUIPMENT
AND TRAINING IN BASIC SCIENCE, TECHNOLOGY,
ENGINEERING & MATHEMATICS EDUCATION (BSTEM)**

THIS AGREEMENT made on the.....day of..... 2018. Between the GOVERNMENT OF GHANA represented by Minister of Education or its duly authorized representative (hereinafter called "the Purchaser") of P.O. Box M45, Near Accra Sports Stadium, Accra of the one part and Itec Global, a limited liability company incorporated under the laws of United Kingdom (UK), whose principal place of business is at The Manse 28 George Street Lutterworth LE 17 4EE UK represented by its duly authorized representative (hereinafter called "the Supplier") of the other part.

WHEREAS the Purchaser invited Tenders for certain Goods and ancillary services, viz.: Supply and Installation of Educational Equipment and Training in Basic Science, Technology, Engineering & Mathematics Education (BSTEM) as per attached and has accepted a Tender by the Supplier for the supply of those goods and services in the sum of the cedi equivalent of £76,920,562.15 (SEVENTY SIX MILLION, NINE HUNDRED AND TWENTY THOUSAND, FIVE HUNDRED AND SIXTY-TWO POUNDS AND FIFTEEN PENCE) (hereinafter called "the Contract Price") inclusive of delivery and installation, training and taxes to all basic schools in the country within five (5) years from date of signing the Contract.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this agreement words and expressions shall have the same meaning as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
 - (a) the Purchaser's Notification to the Supplier of award of Contract;
 - (b) the Acceptance Letter;
 - (c) the Price Schedules submitted by the Supplier;
 - (d) the General Conditions of Contract;
 - (e) the Special Conditions of Contract;
 - (f) the Schedule of Requirements
 - (e) the Technical Specifications
 - (f) Appendices:
 - Appendix A : Terms of Reference
 - Appendix B : Key Experts
 - Appendix C : Breakdown of Contract Price
 - Appendix D : Program of Work (Supply and Installation of Equipment; and Training Program)
 - Appendix E : Performance Guarantee
 - Appendix F : PPA's Approvals
 - Appendix G : Approval To Denominate Contract in Foreign Currency
 - Appendix H : Distribution of Schools

3. In consideration of the payment to be made by the Purchaser to the Supplier, as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Purchaser hereby covenants to pay the Supplier, in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provision of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this agreement to be executed in accordance with their respective laws the day and year first above written.

On behalf of the Purchaser

Name:

Signature:

Designation:

Seal:

Date:

Witnessed By:

Name:

Signature:

Designation:

Date:

On behalf of the Supplier

Name:

Signature:

Designation:

Seal:

Date:

Witnessed by:

Name:

Signature:

Designation:

Date:

Section II. General Conditions of Contract

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Section II. General Conditions of Contract

1. Definitions

2.1 The following words and expressions shall have the meanings hereby assigned to them:

- (a) "Contract" means the Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein.
- (b) "Contract Documents" means the documents listed in the Agreement, including any amendments thereto.
- (c) "Contract Price" means the price payable to the Supplier as specified in the Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.
- (d) "Day" means calendar day.
- (e) "Delivery" means the transfer of ownership of the Goods from the Supplier to the Purchaser in accordance with the terms and conditions set forth in the Contract.
- (f) "Completion" means the fulfillment of the Related Services by the Supplier in accordance with the terms and conditions set forth in the Contract.
- (g) "Eligible Countries" means the countries and territories eligible as listed in Section V.
- (h) "GCC" means the General Conditions of Contract.
- (i) "Goods" means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract.
- (j) "Purchaser" means the entity purchasing the Goods and Related Services, as specified in the SCC.
- (k) "Related Services" means the services incidental to the supply of the goods, such as insurance, installation, training and initial maintenance and other similar obligations of the Supplier under the Contract.
- (l) "SCC" means the Special Conditions of Contract.

- (m) "Subcontractor" means any natural person, private or government entity, or a combination of the above, including its legal successors or permitted assigns, to whom any part of the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Supplier.
- (n) "Supplier" means the natural person, private or government entity, or a combination of the above, whose Tender to perform the Contract has been accepted by the Purchaser and is named as such in the Agreement, and includes the legal successors or permitted assigns of the Supplier.
- (o) "The Site," where applicable, means the place named in the SCC.

2. Contract Documents

- 2.1 Subject to the order of precedence set forth in the Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory.

3. Corrupt Practices

- 3.1 The Government of Ghana (GOG) requires that all Procurement Entities as well as Tenderers, Suppliers, Contractors and Consultants participating in contracts financed from the public funds of the Republic of Ghana, adhere to the highest ethical standards, both during the tendering process and throughout the execution of such contracts. The list of definitions set forth below involves the most common types of corrupt practices, but is not exhaustive. For this reason, the Public Procurement Board will also consider claims of similar nature involving alleged acts of corruption, in accordance with the established procedure.
 - (a). "Bribery" means the act of unduly offering, giving, receiving or soliciting anything of value to influence the process of procuring goods or services, selecting consultants, or executing contracts.
 - (b). "Extortion" or "Coercion" means the act attempting to influence the process of procuring goods or services, selecting consultants, or executing contracts by means of threats of injury to person, property or reputation.
 - (c). "Fraud" means the misrepresentation of information or facts for the purpose of influencing the process of procuring goods or services, selecting consultants, or executing contracts, to the detriment of the Procurement Entity/Purchaser or other participants.

(d) "Collusion" is an agreement between tenderers designed to result in tenders at artificial prices that are not competitive.

3.2 If, in accordance with the administrative procedures of the Public Procurement Board, it is demonstrated that a government/public official, or anyone acting on his or her behalf, and/or a Tenderer in a procurement process or supplier/contractor during the execution of the contract carried out in connection with a project financed from the public funds of the Republic of Ghana has committed corrupt practices, the Public Procurement Board or the appropriate Tender review Board will:

- (a) reject a proposal to award a contract in connection with the respective procurement process; and/or
- (b) declare a firm and/or its personnel directly involved in corrupt practices, temporarily or permanently ineligible to be awarded future contracts financed from the public funds of the Republic of Ghana.

3.3 The Tenderer shall disclose any commissions or fees that may have been paid or are to be paid to agents, representatives, or commission agents with respect to the tendering process or execution of the contract. The information disclosed must include at the name and address of the agent, representative, or commission agent, the amount and currency, and the purpose of the commission or fee. The information must be included in the Tender Submission Sheet. Furthermore, Tenderers shall be aware of the provision stated in Sub-Clause 3.2 and Sub-Clause 35.1 (c) of the General Conditions of Contract.

3.4 Any communications between the Tenderer and the Purchaser related to matters of alleged fraud or corruption must be made in writing

4. Interpretation

4.1 If the context so requires it, singular means plural and vice versa.

4.2 Incoterms

- (a) Unless otherwise specified in the SCC, the meaning of any trade term and the rights and obligations of parties thereunder shall be as prescribed by Incoterms.
- (b) The terms EXW, FOB, FCA, CIF, CIP, and other similar terms, when used, shall be governed by the rules prescribed in the current edition of Incoterms, published by the International Chamber of Commerce at the date of the Invitation for Tenders or as specified in the SCC.

4.3 Entire Agreement

The Contract constitutes the entire agreement between the Purchaser and the Supplier and supersedes all communications, negotiations and agreements (whether written or oral) of parties with respect thereto made prior to the date of Contract.

4.4 Amendment

No amendment or other variation of the Contract shall be valid unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party thereto.

4.5 Non waiver

- (a) Subject to GCC Sub-Clause 4.5(b) below, no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, neither shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.
- (b) Any waiver of a party's rights, powers, or remedies under the Contract must be in writing, dated, and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.

4.6 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

5. Language

- 5.1 The Contract as well as all correspondence and documents relating to the Contract exchanged by the Supplier and the Purchaser, shall be written in the language specified in the SCC. Supporting documents and printed literature that are part of the Contract may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the SCC, in which case, for purposes of interpretation of the Contract, this translation shall govern.
- 5.2 The Supplier shall bear all costs of translation to the governing language and all risks of the accuracy of such translation.

- 6. Joint Venture, Consortium or Association** 6.1 If the Supplier is a joint venture, consortium, or association, all of the parties shall be jointly and severally liable to the Purchaser for the fulfillment of the provisions of the Contract and shall designate one party to act as a leader with authority to bind the joint venture, consortium, or association. The composition or the constitution of the joint venture, consortium, or association shall not be altered without the prior consent of the Purchaser.
- 7. Eligibility** 7.1 The Supplier and its Subcontractors shall have the nationality of an eligible country, in accordance with Section V, Eligible Countries. A Supplier or Subcontractor shall be deemed to have the nationality of a country if it is a citizen or constituted, incorporated, or registered, and operates in conformity with the provisions of the laws of that country.
- 7.2 All Goods and Related Services to be supplied under the Contract and financed from the public funds of the Republic of Ghana shall have their origin in Eligible Countries.
- 7.3 For the purpose of this Clause, origin means the country where the goods have been grown, mined, cultivated, produced, manufactured, or processed; or through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its imported components
- 8. Notices** 8.1 Any notice given by one party to the other pursuant to the Contract shall be in writing to the address specified in the SCC. The term "in writing" means communicated in written form with proof of receipt.
- 8.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.
- 9. Governing Law** 9.1 The Contract shall be governed by and interpreted in accordance with the laws of Ghana, unless otherwise specified in the SCC.
- 10. Settlement of Disputes** 10.1 The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- 10.2 If the parties fail to resolve such a dispute or difference by mutual consultation within twenty-eight (28) days from the commencement of such consultation, either party may require that the dispute be referred for resolution to the formal mechanisms specified in the SCC. These mechanisms may include, but are not

restricted to, conciliation mediated by a third party, adjudication in an agreed national or international forum, and/or international arbitration.

- 11. Scope of Supply**
- 11.1 Subject to the SCC, the Goods and Related Services to be supplied shall be as specified in the Schedule of Requirements.
- 11.2 Unless otherwise stipulated in the Contract, the Supply shall include all such items not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Delivery and Completion of the Goods and Related Services as if such items were expressly mentioned in the Contract.
- 12. Delivery and Documents**
- 12.1 Subject to GCC Sub-Clause 32.1, the Delivery of the Goods and Completion of the Related Services shall be in accordance with the Delivery and Completion Schedule specified in the Schedule of Requirements. The details of shipping and other documents to be furnished by the Supplier are specified in the SCC.
- 13. Supplier's Responsibilities**
- 13.1 The Supplier shall supply all the Goods and Related Services included in the Scope of Supply in accordance with GCC Clause 11, and the Delivery and Completion Schedule, as per GCC Clause 12.
- 14. Contract Price**
- 14.1 The Contract Price shall be as specified in the Agreement subject to any additions and adjustments thereto, or deductions therefrom, as may be made pursuant to the Contract.
- 14.2 Prices charged by the Supplier for the Goods delivered and the Related Services performed under the Contract shall not vary from the prices quoted by the Supplier in its Tender, with the exception of any price adjustments authorized in the SCC.
- 15. Terms of Payment**
- 15.1 The Contract Price, including any Advance Payments, if applicable, shall be paid as specified in the SCC.
- 15.2 The Supplier's request for payment shall be made to the Purchaser in writing, accompanied by invoices describing, as appropriate, the Goods delivered and Related Services performed, and by the documents submitted pursuant to GCC Clause 12 and upon fulfillment of all the obligations stipulated in the Contract.
- 15.3 Payments shall be made promptly by the Purchaser, no later than sixty (60) days after submission of an invoice or request for payment by the Supplier, and the Purchaser has accepted it.
- 15.4 The currency in which payments shall be made to the Supplier under this Contract shall be those in which the Tender price is expressed.

- 15.5 In the event that the Purchaser fails to pay the Supplier any payment by its respective due date or within the period set forth in the SCC, the Purchaser shall pay to the Supplier interest on the amount of such delayed payment at the rate shown in the SCC, for the period of delay until payment has been made in full, whether before or after judgement or arbitration award.
- 16. Taxes and Duties**
- 16.1 For goods supplied from outside Ghana, the Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside Ghana.
- 16.2 For goods supplied from within Ghana, the Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the Purchaser.
- 16.3 If any tax exemptions, reductions, allowances or privileges may be available to the Supplier in Ghana, the Purchaser shall use its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.
- 17. Performance Security**
- 17.1 The Supplier shall, within twenty-eight (28) days of the notification of contract award, provide a performance security for the due performance of the Contract in the amount specified in the SCC.
- 17.2 The proceeds of the performance security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 17.3 The performance security shall be denominated in the currency of the Contract, or in a freely convertible currency acceptable to the Purchaser, and shall be in one of the following forms:
- (a) a bank guarantee or an irrevocable letter of credit issued by a reputable Bank or Financial Institution located in Ghana or abroad, acceptable to the Purchaser, in using the form included in Section IX Contract Forms; or
 - (b) a cashier's certified check.
- 17.4 The performance security shall be discharged by the Purchaser and returned to the Supplier not later than twenty-eight (28) days following the date of completion of the Supplier's performance obligations under the Contract, including any warranty obligations, unless specified otherwise in the SCC.
- 18. Copyright**
- 18.1 The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such

materials shall remain vested in such third party

19. Confidential Information

- 19.1 The Purchaser and the Supplier shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following completion or termination of the Contract. Notwithstanding the above, the Supplier may furnish to its Subcontractor such documents, data, and other information it receives from the Purchaser to the extent required for the Subcontractor to perform its work under the Contract, in which event the Supplier shall obtain from such Subcontractor an undertaking of confidentiality similar to that imposed on the Supplier under GCC Clause 19.
- 19.2 The Purchaser shall not use such documents, data, and other information received from the Supplier for any purposes unrelated to the contract. Similarly, the Supplier shall not use such documents, data, and other information received from the Purchaser for any purpose other than the design, procurement, or other work and services required for the performance of the Contract.
- 19.3 The obligation of a party under GCC Sub-Clauses 19.1 and 19.2 above, however, shall not apply to information that:
- (a) the Purchaser or Supplier need to share with the Public Procurement Board of the Republic of Ghana or other institutions participating in the financing of the Contract;
 - (b) now or hereafter enters the public domain through no fault of that party;
 - (c) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party; or
 - (d) otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.
- 19.4 The above provisions of GCC Clause 19 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Supply or any part thereof.
- 19.5 The provisions of GCC Clause 19 shall survive completion or termination, for whatever reason, of the Contract.

20. Subcontracting

- 20.1 The Supplier shall notify the Purchaser in writing of all

subcontracts awarded under the Contract if not already specified in the Tender. Subcontracting shall in no event relieve the Supplier from any of its obligations, duties, responsibilities, or liability under the Contract.

20.2 Subcontracts shall comply with the provisions of GCC Clauses 3 and 7.

21. Specifications and Standards

21.1 Technical Specifications and Drawings

- (a) The Supplier shall ensure that the Goods and Related Services comply with technical specifications and other provisions of the Contract.
- (b) The Supplier shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designed by or on behalf of the Purchaser, by giving a notice of such disclaimer to the Purchaser.
- (c) The Goods and Related Services supplied under this Contract shall conform to the standards mentioned in Section VI, Schedule of Requirements and, when no applicable standard is mentioned, the standard shall be equivalent or superior to the official standards whose application is appropriate to the goods' country of origin.
- (d) Wherever references are made in the Contract to codes and standards in accordance with which it shall be executed, the edition or the revised version of such codes and standards shall be those specified in the Schedule of Requirements. During Contract execution, any changes in any such codes and standards shall be applied only after approval by the Purchaser and shall be treated in accordance with GCC Clause 32.

22. Packing and Documents

22.1 The Supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. During transit, the packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt and precipitation, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.

22.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including

additional requirements, if any, specified in the SCC, and in any other instructions ordered by the Purchaser.

23. Insurance

23.1 Unless otherwise specified in the SCC, the Goods supplied under the Contract shall be fully insured—in a freely convertible currency from an eligible country—against loss or damage incidental to manufacture or acquisition, transportation, storage, and delivery, in accordance with the applicable Incoterms or in the manner specified in the SCC.

24. Transportation

24.1 Unless otherwise specified in the SCC, responsibility for arranging transportation of the Goods shall be in accordance with the Incoterms specified in the Schedule of Requirements.

25. Inspections and Tests

25.1 The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified in the Schedule of Requirements.

25.2 The inspections and tests may be conducted on the premises of the Supplier or its Subcontractor, at point of delivery, and/or at the Goods' final destination, or in another place in Ghana as specified in the SCC. Subject to GCC Sub-Clause 25.3, if conducted on the premises of the Supplier or its Subcontractor, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser.

25.3 The Purchaser or its designated representative shall be entitled to attend the tests and/or inspections referred to in GCC Sub-Clause 25.2, the costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses shall be borne by the Supplier.

25.4 Whenever the Supplier is ready to carry out any such test and inspection, it shall give a reasonable advance notice, including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.

25.5 The Purchaser may require the Supplier to carry out any test and/or inspection not required by the Contract but deemed necessary to verify that the characteristics and performance of the Goods comply with the technical specifications codes and standards under the Contract, provided that the Supplier's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impedes the progress of

manufacturing and/or the Supplier's performance of its other obligations under the Contract, due allowance will be made in respect of the Delivery Dates and Completion Dates and the other obligations so affected.

- 25.6 The Supplier shall provide the Purchaser with a report of the results of any such test and/or inspection.
- 25.7 The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice pursuant to GCC Sub-Clause 25.4.
- 25.8 The Supplier agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report pursuant to GCC Sub-Clause 25.6, shall release the Supplier from any warranties or other obligations under the Contract.

26. Liquidated Damages

- 26.1 Except as provided under GCC Clause 31, if the Supplier fails to deliver any or all of the Goods or perform the Related Services within the period specified in the Contract, the Purchaser may without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in the SCC of the Contract Price for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the percentage specified in those SCC. Once the maximum is reached, the Purchaser may terminate the Contract pursuant to GCC Clause 34.

27. Warranty

- 27.1 The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.
- 27.2 Subject to GCC Sub-Clause 21.1, the Supplier further warrants that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination.
- 27.3 Unless otherwise specified in the SCC, the warranty shall remain valid for twelve (12) months after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the SCC, or for eighteen (18) months after the date of shipment or loading in the country of

origin, whichever period concludes earlier.--

- 27.4 The Purchaser shall give notice to the Supplier stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier to inspect such defects.
- 27.5 Upon receipt of such notice, the Supplier shall, within the period specified in the SCC, expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Purchaser.
- 27.6 If having been notified, the Supplier fails to remedy the defect within the period specified in the SCC, the Purchaser may proceed to take within a reasonable period such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

**28. Patent
Indemnity**

- 28.1 The Supplier shall, subject to the Purchaser's compliance with GCC Sub-Clause 28.2, indemnify and hold harmless the Purchaser and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of:
- (a) the installation of the Goods by the Supplier or the use of the Goods in the country where the Site is located; and
 - (b) the sale in any country of the products produced by the Goods.

Such indemnity shall not cover any use of the Goods or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, neither any infringement resulting from the use of the Goods or any part thereof, or any products produced thereby in association or combination with any other equipment, plant, or materials not supplied by the Supplier, pursuant to the Contract.

- 28.2 If any proceedings are brought or any claim is made against the Purchaser arising out of the matters referred to in GCC Sub-Clause 28.1, the Purchaser shall promptly give the Supplier a notice thereof, and the Supplier may at its own expense and in the Purchaser's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

- 28.3 If the Supplier fails to notify the Purchaser within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Purchaser shall be free to conduct the same on its own behalf.
- 28.4 The Purchaser shall, at the Supplier's request, afford all available assistance to the Supplier in conducting such proceedings or claim, and shall be reimbursed by the Supplier for all reasonable expenses incurred in so doing.
- 28.5 The Purchaser shall indemnify and hold harmless the Supplier and its employees, officers, and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Supplier may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Purchaser.

29. Limitation of Liability

- 29.1 Except in cases of criminal negligence or willful misconduct,
- (a) the Supplier shall not be liable to the Purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Supplier to pay liquidated damages to the Purchaser and
- (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the supplier to indemnify the purchaser with respect to patent infringement

30. Change in Laws and Regulations

- 30.1 Unless otherwise specified in the Contract, if after the date of the Invitation to Tender, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated, or changed in the particular area of Ghana where the Site is located (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date and/or the Contract Price, then such Delivery Date and/or Contract Price shall be correspondingly increased or decreased, to the extent that the Supplier has thereby been affected in the performance of any of its obligations under the

Contract. Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with GCC Clause 14.

31. Force Majeure

- 31.1 The Supplier shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
- 31.2 For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Supplier that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
- 31.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

32. Change Orders and Contract Amendments

- 32.1 The Purchaser may at any time order the Supplier through notice in accordance GCC Clause 8, to make changes within the general scope of the Contract in any one or more of the following:
- (a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
 - (b) the method of shipment or packing;
 - (c) the place of delivery; and
 - (d) the Related Services to be provided by the Supplier.
- 32.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or in the Delivery/Completion Schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this Clause must be asserted within twenty-eight (28) days from the date of the Supplier's receipt of the Purchaser's change order.

32.3 Prices to be charged by the Supplier for any Related Services that might be needed but which were not included in the Contract shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.

33. Extensions of Time

33.1 If at any time during performance of the Contract, the Supplier or its subcontractors should encounter conditions impeding timely delivery of the Goods or completion of Related Services pursuant to GCC Clause 12, the Supplier shall promptly notify the Purchaser in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may at its discretion extend the Supplier's time for performance, in which case the extension shall be ratified by the parties by amendment of the Contract.

33.2 Except in case of Force Majeure, as provided under GCC Clause 31, a delay by the Supplier in the performance of its Delivery and Completion obligations shall render the Supplier liable to the imposition of liquidated damages pursuant to GCC Clause 26, unless an extension of time is agreed upon, pursuant to GCC Sub-Clause 33.1.

34. Termination

34.1 Termination for Default

- (a) The Purchaser, without prejudice to any other remedy for breach of Contract, by notice of default sent to the Supplier, may terminate the Contract in whole or in part:
- (i) if the Supplier fails to deliver any or all of the Goods within the period specified in the Contract, or within any extension thereof granted by the Purchaser pursuant to GCC Clause 33; or
 - (ii) if the Supplier fails to perform any other obligation under the Contract.
- (b) In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC Clause 34.1(a), the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Related Services similar to those undelivered or not performed, and the Supplier shall be liable to the Purchaser for any additional costs for such similar Goods or Related Services. However, the Supplier shall continue performance of the Contract to the extent not terminated.
- (c) if the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices, as defined in

GCC Clause 3, in competing for or in executing the Contract.

34.2 Termination for Insolvency.

- (a) The Purchaser may at any time terminate the Contract by giving notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to the Purchaser

34.3 Termination for Convenience.

- (a) The Purchaser, by notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.
- (b) The Goods that are complete and ready for shipment within twenty-eight (28) days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:
 - (i) to have any portion completed and delivered at the Contract terms and prices; and/or
 - (ii) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Related Services and for materials and parts previously procured by the Supplier.

35. Assignment

- 35.1 Neither the Purchaser nor the Supplier shall assign, in whole or in part, their obligations under this Contract, except with prior written consent of the other party.

Section III. Special Conditions of Contract

The following Special Conditions of Contract (SCC) shall supplement and / or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

GCC 1.1(j)	The Purchaser is: Ministry of Education
GCC 1.1 (o)	The Site is: 38,715 Basic Schools across the Country. See Distribution Schedule Attached
GCC 4.2 (a)	The meaning of the trade terms shall be as prescribed by Incoterms .
GCC 4.2 (b)	The version edition of Incoterms shall be: Incoterms 2010
GCC 5.1	The language shall be: English
GCC 8.1	For notices , the Purchaser's address shall be: Attention: Chief Director Ministry of Education, Accra Address: P.O. Box M45, Accra City: Accra Region: Greater- Accra Country: Ghana Telephone: +233 302 666070, 683745 Facsimile number:- 233-302-679353 Electronic mail address:-
GCC 9.1	The governing law shall be the laws of Ghana
GCC 10.2	If the parties fail to resolve such a dispute or difference by mutual consultation within twenty-eight (28) days from the commencement of such consultation, in the case of a dispute between the Purchaser and a Supplier from Ghana, the dispute shall be referred to adjudication or arbitration in accordance with the laws of Ghana.
GCC 11.1	The scope of supply for the Goods and Related Services to be supplied shall be as specified in Schedule of Requirement .

GCC 12.1

Delivery and Documents

For Goods supplied from abroad:

Sample provision (DDP terms)

Prior to shipment of the BSTEM equipment, a team of four (4) Officers from the Purchaser shall visit the country of origin of the goods to conduct inspection and present a report to the Purchaser.

Upon shipment, the Supplier shall notify the Purchaser and the Insurance Company by cable the full details of the shipment, including Contract number, description of Goods, quantity, the vessel, the bill of lading number and date, port of loading, date of shipment, port of discharge, etc. The Supplier shall mail the following documents to the Purchaser, with a copy to the Insurance Company:

- (i) copies of the Supplier's invoice showing Goods' description, quantity, unit price, and total amount;
- (ii) original and Two (2) copies of the negotiable, clean, on-board bill of lading marked "freight prepaid" and Two (2) copies of nonnegotiable bill of lading;
- (iii) copies of the packing list identifying contents of each package;
- (iv) insurance certificate;
- (v) Manufacturer's or Supplier's warranty certificate;
- (vi) inspection certificate, issued by the nominated inspection agency, and the Supplier's factory inspection report; and
- (vii) certificate of origin.

The above documents shall be received by the Purchaser at least one week before arrival of the Goods at the port or place of arrival and, if not received, the Supplier will be responsible for any consequent expenses.

For Goods from within the Purchaser's country:

Sample Provision (EXW term)

Upon delivery of the Goods to the transporter, the Supplier shall notify the Purchaser and mail the following documents to the Purchaser:

- (i) copies of the Supplier's invoice showing Goods' description, quantity, unit price, and total amount;
- (ii) delivery note, railway receipt, or truck receipt;
- (iii) Manufacturer's or Supplier's warranty certificate;
- (iv) inspection certificate issued by the nominated inspection agency, and the Supplier's factory inspection report; and
- (v) certificate of origin.

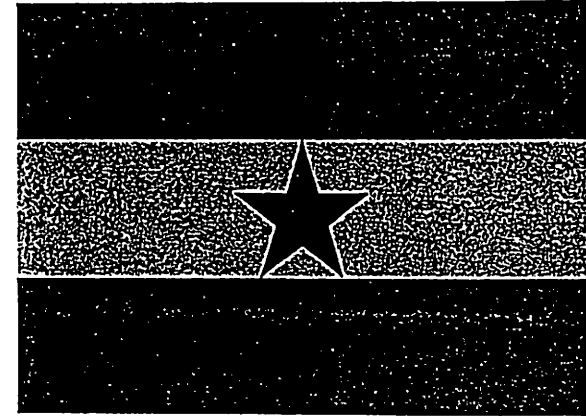
The above documents shall be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses.

GCC 14.2	<p>The prices charged for the Goods delivered and the related Services performed shall not be adjustable.</p> <p>If prices are adjustable, the method specified in the attachment to the SCC shall be used to calculate the price adjustment.</p>
GCC 15.1	<p>The terms of payment shall be as follows:</p> <p>Sample Provision</p> <p>The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:</p> <p>Payment for Goods Supplied from abroad:</p> <p>Payment of foreign currency portion shall be made in the currency of the Contract Price in the following manner:</p> <p><u>On shipment</u></p> <p>(i) Seventy percent (70%) of the Contract Price of the Basic Science, Technology, Engineering and Mathematics (BSTEM) Equipment shipped will be paid through an Irrevocable Letter of Credit opened in favour of the Supplier in a Bank in its country, upon submission of shipping documents specified in GCC Clause 12.</p> <p><u>On Delivery and Acceptance</u></p> <p>(i) The remaining thirty percent (30%) of the Contract Price of the Basic Science, Technology, Engineering and Mathematics (BSTEM) Equipment including technical services, installation and commissioning shall be paid to the supplier within sixty (60) days after the date of receipt of claim letter supported by Store Receipt Advise (SRA) and acceptance certificate signed by the Employer.</p> <p>(ii) Hundred percent (100%) of the Contract Price of the vehicle shall be paid to the Supplier within thirty (30) days upon presentation of a certificate by the Supplier confirming use of the vehicle and stating that the vehicle remains the property of the Purchaser and that the Supplier is responsible for the running and servicing until the vehicle is handed back to the Purchaser at the end of the programme.</p> <p>Payment for Training and Infrastructure</p> <p>For training and infrastructure, payments would be drawn down as follows:</p> <p>(iii) 50% of the value on commencement of training and infrastructure works and upon submission of an inception report/Payment Certificate</p> <p>(iv) 25% of the value upon submission of Progress Report</p> <p>(v) 25% of the value upon submission of Final Project Completion Report</p>

GCC 15.5	No interest shall be paid on delayed payment.
GCC 17.1	The amount of performance security, as a percentage of the Contract Price, shall be: 10% of the Contract Price.
GCC 17.3 (a)	The performance security acceptable to the Purchaser shall be in the form of either a bank guarantee or an irrevocable letter of credit issued by a reputable bank or financial institution located in Ghana or abroad, acceptable to the Purchaser.
GCC 17.4	After delivery and acceptance of the Goods, the performance security shall be reduced to two (2) percent of the Contract Price to cover the Supplier's warranty obligations in accordance with Clause GCC 27.3.
GCC 22.2	The packing, marking and documentation within and outside the packages shall be: Supply and Installation of Educational Equipment for Basic Science, Technology, Engineering & Mathematics (BSTEM) GR/MOE/SS/BSTEM/04/18 Ministry of Education, Accra, Ghana
GCC 23.1	The Insurance shall be in an amount equal to 110 percent of the CIP value of the Goods from "warehouse" to "warehouse" on "All Risks" basis, including War Risks and Strikes.
GCC 24.1	Responsibility for transportation of the Goods shall be as specified in the Incoterms. If not in accordance with Incoterms, responsibility for transportations shall be as follows: Incoterms 2010, DDP, Ministry of Education
GCC 25.2	The Inspections and tests shall be conducted at: Port of Destination Inspection and test by a Ghana Government appointed Inspection Agency
GCC 26.1	The liquidated damage shall be: 1% per week
GCC 26.1	The maximum amount of liquidated damages shall be: 10%

GCC 27.3	The period of validity of the Warranty shall be: twelve (12) months after the Goods have been delivered For purposes of the Warranty, the place of final destination shall be: <u>the beneficiary Institutions (see schedule of distribution)</u>
GCC 27.5	The period for repair or replacement shall be: Four (4) Weeks after Purchaser has given notice to the Supplier.

Section IV. Technical Specifications






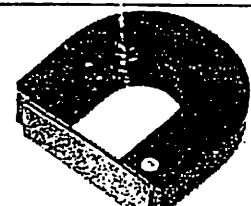
Technical Specifications

B.S.T.E.M.



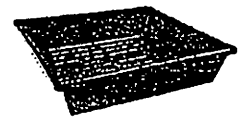

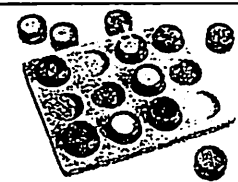
Kindergarten - Basic Science, Maths, Engineering and Technology

Ministry of Education

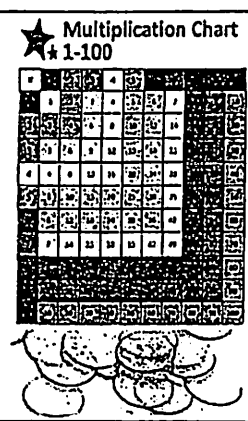


2018

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
KS01	Bug Pots Plastic, Durable, Clear	Each	10	
KS02	Hand Magnifiers Large	Each	5	
KS03	Kindergarten Mapped Activity Manual Minimum 40 Page A4 manual. Full colour printing throughout. Includes training activities, comprehensive classroom activity set and printable classroom resources. Specifically linked to Ghana Kindergarten syllabus objectives and BSTEM Regional Advisor Training Programme	Each	1	
KS04	Magnet Giant Horseshoe	Each	1	

Basic Science, Maths, Engineering and Technology

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
KS05	Modelling Clay	Pack	5	
KS06	Pan & Bucket Balance	Each	1	
KS07	Seed Trays Reusable, plastic	Each	3	
KS08	Talking Tubes Encourage communication and language skills. Includes 2 handsets and a length of strong yellow, hollow flexible tubing allowing pupils to talk to each other over the phone.	Each	2	
KS09	Touch & Match Board Teaches tactile differences and sensory perception. Consists of different tactile materials.	Each	1	

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
KM01	<p>1-100 Number Plate</p> <p>High quality rigid card plate base, A4 size with 100 transparent counters.</p>	Each	10	
KM02	<p>Counting and Shape Matching</p> <p>76 Wooden pieces, 10 number, 10 spot, 55 discs and 1 base. Dimensions 13.5cm x 41.5cm x 8cm.</p>	Set	2	
KM03	<p>Kindergarten Mapped Activity Manual</p> <p>Minimum 40 Page A4 manual. Full colour printing throughout. Includes training activities, comprehensive classroom activity set and printable classroom resources. Specifically linked to Ghana Kindergarten syllabus objectives and BSTEM Regional Advisor Training Programme.</p>	Each	1	

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
KM04	Multiplication/Division Plate High quality rigid card plate base, A4 size with 50 transparent counters.	Each	10	 <p>★ Multiplication Chart ★ 1-100</p>
KM05	Wooden Arithmetic Counting Sticks 7cm wooden rods in 5 different colours. 100 sticks per set with 20 of each colour. Packed in a high-quality plastic box.	Set	10	
KM06	Wooden Geometry Cognitive Matching Plates. 16 Wooden pieces, 15 shapes and 1 base. Dimensions 10cm x 35cm x 2.8cm.	Set	10	

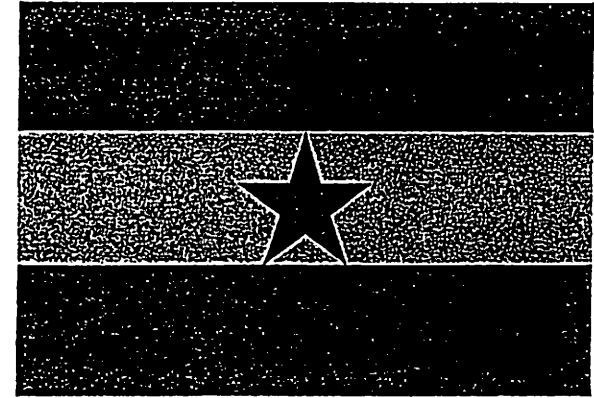
Some suppliers are outside the UK and Europe, however, goods supplied are all to UK standard and will come with a 12 months warranty after installation in the school.

Itec Global Limited
The Manse
28 George Street
Lutterworth
LE17 4EE UK

Email: sam.godding@itecglobal.co.uk, jhsghana2010@yahoo.co.uk

Tel: +44 (0) 7824 394 551, +233 20 816 2772

Web: <http://itecglobal.co.uk>





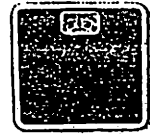



Technical Specifications

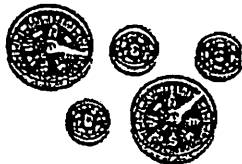

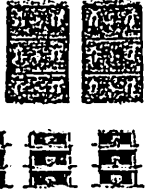

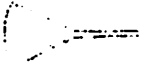
B.S.T.E.M.

Primary School - Basic Science, Maths, Engineering and Technology

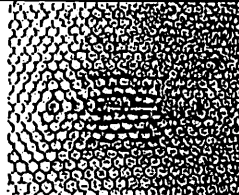




Ministry of Education

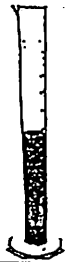




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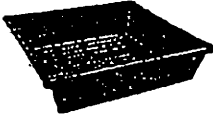

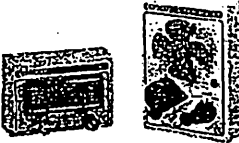
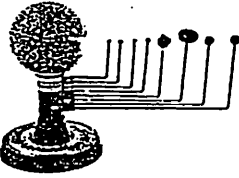

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
PS1	Balance compression 2kg Durable Plastic body balance with wide dial and scale. Useful for weighing chemicals and general purposes. Made of plastic body with wide view dial and easily readable scale. Most durable and provided with zero adjustment knob. Cap.: 2kg Sub division: 10g	Each	2	
PS2	Magnets (Bar) 100 x 12 x 5 mm Chrome steel magnets Perform a variety of activities and experiments involving magnetism Low magnetic strength for careful experiments, Red/Blue	Each	20	
PS3	Bathroom Scale Analog, Durable KG	Each	1	
PS4	Beakers 250CM3 PP Polypropylene, autoclavable, excellent clarity and chemical resistance. Easy to read printed graduation.	Each	10	
PS5	Bug Pots Plastic, Durable, Clear	Each	5	
PS6	Compass Giant Demonstration for Primary	Each	1	




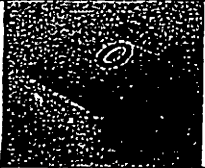
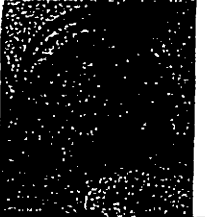
Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
PS7	Compasses Plotting Plastic 16mm Housed in a plastic case with clear directional marking make it easy to read. Very useful for study the characteristics of a magnetic field.	Each	15	
PS8	Electric Motors A model of the simplest form of DC electric motor with a removable bar magnet. 4 mm sockets. Operates on 6-8V DC.	Each	5	
PS9	Electricity Kits contains electrical components and holders allowing pupils to make simple circuits and demonstrate different effects of electricity.	Each	10	
PS10	Filter Paper 18.5cm Pack of 100 Circles WHATMAN No.1 equivalent	Pack	2	
PS11	Funnel Filter Plastic 90mm Polythene, unaffected by acids, alkalis etc.	Each	10	

Basic Science, Maths, Engineering and Technology


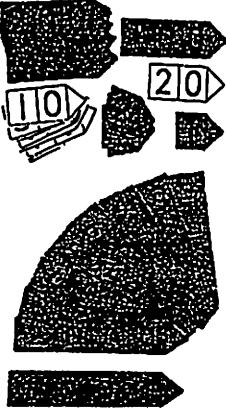
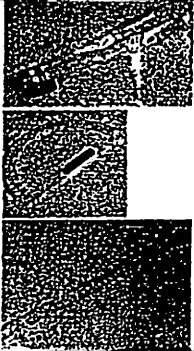
Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
PS12	Iron Filings contained in bubble wrap plastic To show magnetic fields	Each	5	
PS13	Leads Red/Black with Croc-clips Insulated with crocodile clip at both ends, for 4 mm plug. Length 750 mm, Black x10, Red x10	Each	40	
PS14	Magnifier Hand Lens 50mm Robust for Classrooms	Each	10	
PS15	Primary Mapped Activity Manual Minimum 60 Page A4 manual. Full colour printing throughout. Includes training activities, comprehensive classroom activity set and printable classroom resources. Specifically linked to Ghana Primary syllabus objectives and BSTEM Regional Advisor Training Programme.	Each	1	
PS16	Measuring Cylinder Plastic 100ml Polypropylene. Single piece, autoclavable, graduated and have excellent contact clarity. Base provides good stability. Capacity: 100 ml, Graduation: 1.0 ml	Each	10	



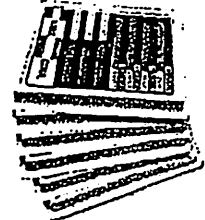
Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
PS17	Measuring Cylinder Plastic 250ml Polypropylene. Single piece, autoclavable, graduated and have excellent contact clarity. Base provides good stability. Capacity: 250 ml, Graduation: 2.0 ml	Each	10	
PS18	Mirror (Plane)	Set of 10	2	
PS19	Pipettes Plastic Translucent with graduation Material LDPE	Each	100	
PS20	Block and tackle model - for demonstration or student use to model how the use of several pulleys increases one's mechanical advantage for qualitatively and quantitatively and its design lends itself easily to inquiry-based activities	Each	2	
PS21	Pulley Kit Single Two Hooks This apparatus can model how the use of several pulleys increases one's mechanical advantage Students can use this both qualitatively and quantitatively and its design lends itself easily to inquiry-based activities	Each	2	

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
PS22	Seed Trays Reusable, plastic	Each	3	
PS23	Slinky Plastic Round, Spring, Coil, Bend, Stretch, Inside Use, Outside Use, Layered, Solid	Each	1	
PS24	Solar Energy Kit Apply knowledge of solar energy in a practical experiment with this Solar Energy Kit. A solar panel housed in a plastic box, a low consumption motor with fan, a buzzer and an LED are all included for conducting a series of solar powered activities.	Each	1	
PS25	Solar System Model (array) This three-dimensional model allows students to study our solar system -- looking at planets (and a dwarf planet -- non-specific) relative sizes and colours. Planets can be set by month to show their relative positions. The 5.9" sun is supported on a sturdy base with the outer most (dwarf) planet being 18" from the sun. An illustrated guide is included with planet position tables.	Each	1	
PS26	Spring Balances Plastic, tubular The spring mechanism is clearly visible, and zero adjustment is incorporated.	Each	16	

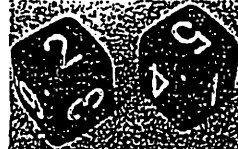




Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
PS27	String	Roll	1	
PS28	Syringes re-useable 10ml Sterilized, Plastic, individual pack and graduated with Luer fitting.	Each	20	
PS29	Thermometer Yellow enamelled back and reinforced bulbs filled with Red / Blue spirit. Length 305 mm Range: -10 to 110°C Grad. 1°C Length 305 mm	Each	15	
PM1	100 Cards A pack of 100 cards (57.5 x 89mm) with numbers 0 to 99 on high quality 300g art paper packed in a card tuck box.	Pack	9	
PM2	Ruler 30cm 30cm Unbreakable, shatterproof, design with bevelled edges and high rigidity. 2mm thickness.	Each	45	

Basic Science, Maths, Engineering and Technology

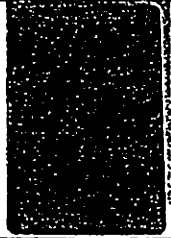
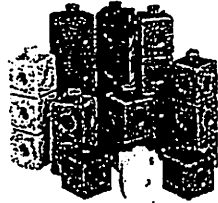
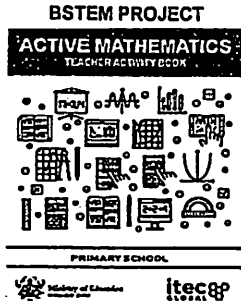

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
PM3	<p>360 Degree Protractor Hard plastic with rotating angle measuring arm. Packed as a set in sealed transparent plastic box.</p>	Each	45	
PM4	<p>Base 10 Arrows (0-9999) Die cut from rigid, high quality card. Dimensions based on square size of 3cm. Each set is 9 arrows each of 1-9, 10-90, 100-900 and 1000-9000</p>	Set	45	
PM5	<p>Teacher Board Equipment (Ruler, Compasses, Protractor) High density plastic, to high manufacturing tolerance and rigidity. Large plastic handles for ease of use.</p>	Each	1	



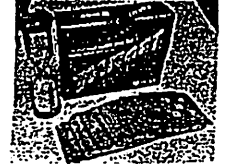
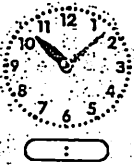
Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture																																				
PM6	<p>Calculator (4 function with square root etc.) With solar cell. Packed individually in card boxes and supplied as a set of 45 MC, MR, M-, M+, %, $\sqrt{\quad}$, +/-, X, \div, +, -, =</p>	Each	45																																					
PM7	<p>Counters 25mm diameter high density plastic in eight colours. Packed as a set in sealed transparent plastic box</p>	Pack of 1000	1																																					
PM8	<p>Cuisenaire Rods Standard 74 piece set of wooden coloured pieces. Each set packed in a plastic storage tray. Each unit is 1cm cube.</p> <table border="1"> <thead> <tr> <th>Colour</th> <th>Length (cm)</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td>White</td> <td>1</td> <td>22</td> </tr> <tr> <td>Red</td> <td>2</td> <td>12</td> </tr> <tr> <td>Light green</td> <td>3</td> <td>10</td> </tr> <tr> <td>Purple</td> <td>4</td> <td>6</td> </tr> <tr> <td>Yellow</td> <td>5</td> <td>4</td> </tr> <tr> <td>Dark green</td> <td>6</td> <td>4</td> </tr> <tr> <td>Black</td> <td>7</td> <td>4</td> </tr> <tr> <td>Brown</td> <td>8</td> <td>4</td> </tr> <tr> <td>Blue</td> <td>9</td> <td>4</td> </tr> <tr> <td>Orange</td> <td>10</td> <td>4</td> </tr> <tr> <td>Total</td> <td></td> <td>74</td> </tr> </tbody> </table>	Colour	Length (cm)	QTY	White	1	22	Red	2	12	Light green	3	10	Purple	4	6	Yellow	5	4	Dark green	6	4	Black	7	4	Brown	8	4	Blue	9	4	Orange	10	4	Total		74	Set	9	
Colour	Length (cm)	QTY																																						
White	1	22																																						
Red	2	12																																						
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Purple	4	6																																						
Yellow	5	4																																						
Dark green	6	4																																						
Black	7	4																																						
Brown	8	4																																						
Blue	9	4																																						
Orange	10	4																																						
Total		74																																						

Basic Science, Maths, Engineering and Technology

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
PM9	Dice numeral (minimum 22mm) Large, minimum 22mm high density plastic, carved then printed for long life. Packed as a set in sealed transparent plastic box.	Each	100	
PM10	Dice operator (minimum 22mm) Large, minimum 22mm high density plastic, carved then printed for long life. Packed as a set in sealed transparent plastic box.	Each	45	
PM11	GeoBoards (12x12) and Rubber Bands High quality high density plastic with accurate mushroom head pegs for excellent retention of bands. Sets of bands in various lengths and colours packed separately in high quality sealed transparent plastic box.	Each	9	
PM12	Geometric Solids (12 piece) Standard 12 piece set in wood. Packed in high quality sealed transparent plastic box. <i>Cuboids (3): (different base: height ratio) inc. cube</i> <i>Prisms (3): triangle, pentagonal, hexagonal</i> <i>Cylinder (2): (different base: height ratio)</i> <i>Pyramids (2): triangle based, cones</i> <i>Sphere (1)</i> <i>Hemisphere (1)</i> For size reference: cone height = 80mm, base diameter = 50mm	Set	1	
PM13	Large Plastic Storage Boxes 30ltrs. For storage of all items except the calculators and board equipment. Very high-quality design with perpendicular sides to base for maximum space efficiency. Integral handles which clip to lock the lid.	Each	2	

Basic Science, Maths, Engineering and Technology

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
PM14	<p>Mini Chalk Slate</p> <p>Very high quality, A4 sized, rigid frameless curved corner board design. Black on both sides. Very high-quality duster with rigid housing and felt pads. One box of 100 pieces of high quality classroom chalk.</p>	Each	45	
PM15	<p>Multilink Cubes</p> <p>Very high quality 2cm x 2cm cubes. Set of 500 equally split into 10 different colours. Packed as a set in a high quality plastic storage box.</p>	Pack of 500	1	
PM16	<p>Primary Mapped Activity Manual</p> <p>Minimum 60 Page A4 manual.</p> <p>Full colour printing throughout. Includes training activities, comprehensive classroom activity set and printable classroom resources.</p> <p>Specifically linked to Ghana Primary syllabus objectives and BSTEM Regional Advisor Training Programme.</p>	Each	1	
JM17	<p>Sand Timers.</p> <p>High quality. End diameter 25mm, length 96mm. Packed as a set in high quality sealed transparent plastic box.</p>	Each	15	

Item	Proposed Specifications	Unit	Qty per Site	Descriptive Picture
JM18	Scissors (12RH/3LH) School safe rounded ends. Colour coded handles for left and right handedness. 40mm blades. Packed as a set in high quality sealed transparent plastic box.	Each	15	
JM19	Tape Measure 1.5m thick plastic tape measure 1.4mm wide. Packed as a set in high quality sealed transparent plastic box.	Each	15	
JM20	Target Maths Card Game Packs A 120 card (70x70mm) pack with full rules booklet in a rigid storage to high retail quality. Includes its own 3 minute sand timer. Practices fast mental arithmetic skills by combining number sets to make given targets.	Pack	9	
PM21	Wall Demonstration Clock (analogue/digital) High quality rigid plastic construction. Analogue geared mechanism with digital panel for teacher demonstration. Analogue face minimum diameter 30cm.	Each	1	

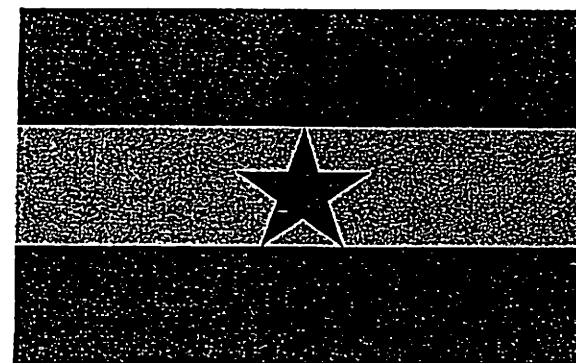
Some suppliers are outside the UK and Europe, however, goods supplied are all to UK standard and will come with a 12 months warranty after installation in the school.

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The Manse
28 George Street
Lutterworth
LE17 4EE UK

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Technical Specifications

B.S.T.E.M.

Junior High School - Basic Science, Maths, Engineering and Technology

Ministry of Education

2018

Science				
Code	Item	Unit	Qty	
JS1	Balance compression 2kg	Each	2	
JS2	Beaker Glass 100ml	Each	20	
JS3	Beaker Plastic 250ml	Each	10	
JS4	Beaker Plastic 500ml	Each	5	
JS5	Conducting Thermal Rods	Each	5	
JS6	Conical Flask 100ml	Each	10	
JS7	Dropping Pipettes Plastic	Each	50	
JS8	Electricity Kit	Each	1	
JS9	Electronics Kit	Each	9	
JS10	Evaporating Dish	Each	5	
JS11	Filter Paper	Pack	4	
JS12	Funnel Filter Plastic	Each	10	
JS13	Iron Filings	Pack	4	
JS14	JHS Mapped Activity Manual	Each	1	
JS15	Leads Red/Black with Croc-clips	Each	20	
JS16	Litmus Paper - Blue	Books	5	
JS17	Litmus Paper - Red	Books	5	
JS18	Magnet Kit	Pack	2	
JS19	Magnets (Bar)	Each	20	
JS20	Masses 100g	Set	4	
JS21	Measuring Cylinder Plastic 100ml	Each	10	
JS22	Measuring Cylinder Plastic 250ml	Each	10	
JS23	Metal Rod Retort, Base, Clamp	Set	3	
JS24	Mirrors Kit	Set	3	
JS25	Optical Pins	Pack	1	
JS26	Petri Dish Plastic	Each	20	
JS27	Ray Box & Lenses Kit	Each	4	
JS28	Safety Goggles (Junior)	Each	45	
JS29	Spatulas	Each	10	
JS30	Spirit Burners	Each	10	
JS31	Spring Balances 1kg	Each	10	

JS32	Spring Balances 500g	Each	10	
JS33	Stirrer (Plastic, Hand)	Each	10	
JS34	Stoppers Assorted	Each	1	
JS35	Stopwatch Digital	Each	10	
JS36	Syringes re-useable 10ml	Each	10	
JS37	Syringes re-useable 20ml	Each	10	
JS38	Syringes re-useable 2ml	Each	10	
JS39	Syringes re-useable 5ml	Each	10	
JS40	Test-tube Holder	Each	10	
JS41	Test-tube Rack	Each	10	
JS42	Test-tubes 16x100mm, Plastic with Lids	Each	50	
JS43	Test-tubes 24x150mm, Glass	Each	50	
JS44	Thermometer	Each	12	
JS45	Tongs	Each	5	
JS46	Transparent Tubing	Roll	2	
JS47	Tripod with Wire Gauze for Spirit Burners	Each	10	
JS48	White Tile Spotted	Each	10	
JC1	Aluminium Foil	Large Roll	1	
JC2	Benedict's Solution	500ml	1	
JC3	Calcium Chloride (Anhydrous)	500g	1	
JC4	Calcium Hydroxide	250g	1	
JC5	Copper Metal	250g	1	
JC6	Copper Sulphate	500g	1	
JC7	Hydrochloric Acid (1 Molar)	2.5L	1	
JC8	Iodine Solution	500ml	1	
JC9	Magnesium Ribbon	25g	1	
JC10	Methylated Spirits	1L	2	
JC11	Sodium Hydrogen Carbonate	1KG	1	
JC12	Sodium Hydroxide	1KG	1	
JC13	Universal Indicator Solution	250ml	1	
JC14	Zinc Metal	500g	1	

Maths			
Code	Item	Unit	Qty
JM1	100 Cards	Pack	9
JM2	360 Degree Protractor	Each	45
JM3	Calculator (4 function with square root etc)	Each	45
JM4	Counters	Pack of 100	1
JM5	Dice Multi (4,8,10,12,20 sides)	Pack of 5	15
JM6	Dice numeral (minimum 14mm)	Each	100
JM7	Dice operator (minimum 14mm)	Each	45
JM8	Geared Compasses	Each	45
JM9	GeoBoards (12x12) and Rubber Bands	Each	9
JM10	Geometric Solids (19 piece)	Set	1
JM11	Geometry Builder Kit	Pack	9
JM12	GridLines Card Game	Pack	9
JM13	JHS Mapped Activity Manual	Each	1
JM14	Large Plastic Storage Boxes	Each	2
JM15	Mini Chalk Slate	Each	45
JM16	Ruler 30cm	Each	45
JM17	Sand Timers	Each	15
JM18	Scissors (12RH/3LH)	Each	15
JM19	Tape Measure	Each	15
JM20	Target Maths Card Game Packs	Pack	9
JM21	Teacher Board Equipment (Ruler, Compass)	Each	1

ICT			
Code	Item	Unit	Qty
ICT1	Projector	Each	1
ICT2	Laptop	Each	1
ICT3	Warranty (ICT1 & ICT2)	Years	1
ICT4	Programming	Each	1
ICT5	Robotics	Set	1
ICT6	Datalogging	Set	1
ICT7	JHS Mapped Activity Book	Each	1

Electricity kit JS8		Qty
Battery holders (for HP 2 cells)		12
Blubs		40
Bulb holders		20
Resistance wire		1
Insulated copper wire		1
Bare copper wire		1
Push switches		8
Two-way switches		4
Variable resistors		4
Universal clips		8
Short leads		24
Long leads		8
Crocodile clips		8
Carbon electrodes		12
Copper sheet		1
Diodes		4
Resistor		4
Steel Rod		8
Steel mesh wool		1

JS49		Qty
Batteries Rechargeable AA		36
Batteries Rechargeable D		12
Battery Charger AA / D		1





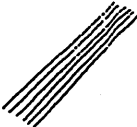
Mirrors kit JS24		Qty
Plane mirrors, Block		2
Concave Mirror		1
Convex Mirror		1
Lenses		2

Electronics Set Contents JS9 x9	QTY
Breadboard	1
12 way Terminal block	1
2.5V MES bulb	1
Bulb holder	1
Ultrabright red LED	1
Red LED	5
Yellow LED	5
Green LED	5
Light dependent resistor	1
Thermistor	1
BC547B transistor	2
1.5V buzzer	1
100uF capacitor	1
470uF capacitor	1
50kΩ preset potentiometer	1
470R resistor	5
1K resistor	5
10K resistor	5
Length of solid core wire	1
Length of stranded wire	1
Length of tinned wire	1
2AA battery box with switch	1
4AA battery box	1
Battery snap	1
Electric motor	2
Motor tag connectors	4
Length of silicone tube	1
Pair of plastic tweezers	1
Metal screw	1
Solar Cell	1
Plastic storage box	1
PN diodes	2
1K uF capacitor	1
Fan	1




Magnets Kit JS18 x2	QTY
Plotting compass	10
Horseshoe	1
Black Bar magnet	2
Red/Blue bar magnet	2
Magnadur	3
Cylindrical	2
Field trays	2
Ring magnets	3
Range of metals	1
Coloured iron balls	5

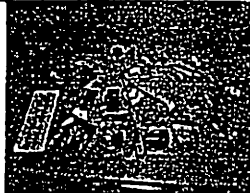
Ray Box & Lenses Kit JS27 x4	QTY
Prisms (different)	3
Concave lens	1
Convex lens	1
Raybox + Lens	1
Triple/Single slit	1




Robots 1G74,5,6 x1	QTY
mBot V1.1-Blue(USB Version)	5
Me RJ25 Adapter V2	1
Me Temperature Sensor-Waterproof (DS18B20)	3
Me PIR Motion Sensor V1	1
Me LED Matrix 8 x 16	2
Me 7-Segment Serial Display - Red	2
mBot Add-on Pack - Six-legged Robot	1
mBot Add-on Pack Interactive Light & Sound	1
mBot Add-on Pack - Servo Pack	1
6P6C RJ25 cable-20cm (4-Pack)	1
6P6C RJ25 cable-35cm(4-Pack)	1
6P6C RJ25 cable-50cm(Pair)	1


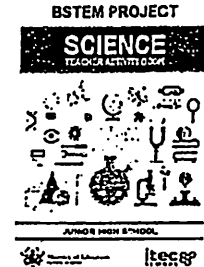



Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JS1	Balance compression 2kg Durable Plastic body balance with wide dial and scale. Useful for weighing chemicals and general purposes. Made of plastic body with wide view dial and easily readable scale. Most durable and provided with zero adjustment knob. Cap.: 2kg Sub division: 10g	Balance compression 2kg Durable Plastic body balance with wide dial and scale. Useful for weighing chemicals and general purposes. Made of plastic body with wide view dial and easily readable scale. Most durable and provided with zero adjustment knob. Cap.: 2kg Sub division: 10g	Each	2	
JS2	Beaker Glass 100ml Graduation low form beaker with spout. Made of Borosilicate glass, graduated as per DIN 12231, ISO 3819. Dia. - 50 mm, Height - 70 mm, Weight - 54 g.	Beaker Glass 100ml Graduation low form beaker with spout. Made of Borosilicate glass, graduated as per DIN 12231, ISO 3819. Dia. - 50 mm, Height - 70 mm, Weight - 54 g.	Each	20	
JS3	Beaker Plastic 250ml Polypropylene, autoclavable	Beaker Plastic 250ml Polypropylene, autoclavable, excellent clarity and very good chemical resistance. Easy to read printed graduation.	Each	10	
JS4	Beaker Plastic 500ml Polypropylene, with moulded graduations, autoclavable, with tapered spout	Beaker Plastic 500ml Polypropylene, with moulded graduations, have excellent clarity and very good chemical resistance, autoclavable, with tapered spout	Each	5	
JS5	Conducting Thermal Rods Cu, Brass, Fe, Al, Zn 300 mm long x 3 mm dia	Conducting Thermal Rods Cu, Brass, Fe, Al, Zn 300 mm long x 3 mm dia	Each	5	

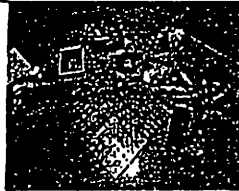
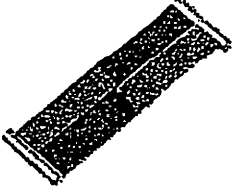

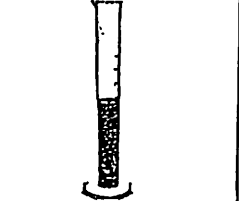
Basic Science, Maths, Engineering and Technology

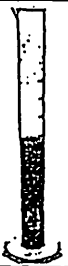
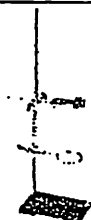

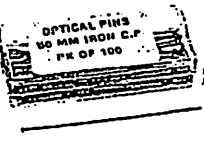

Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JS6	Conical Flask 100ml Borosilicate glass, Erlenmeyer, narrow neck. As per DIN ISO 1773 standard	Conical Flask 100ml Borosilicate glass, Erlenmeyer, narrow neck. As per DIN ISO 1773 standard	Each	10	
JS7	Dropping Pipettes Plastic 1ml graduated by 0.5ml. Translucent with precise graduation Material LDPE	Dropping Pipettes Plastic 1ml graduated by 0.5ml. Translucent with precise graduation Material LDPE	Each	50	
JS8	Electricity Kit Battery holders (for HP 2 cells) 12 Blubs 40 Bulb holders 20 Resistance wire 1 Insulated copper wire 1 Bare copper wire 1 Push switches 8 Two-way switches 4 Variable resistors 4 Universal clips 8 Short leads 24 Long leads 8 Crocodile clips 8 Carbon electrodes 12 Copper sheet 1 Diodes 4 Resistor 4 Steel Rod 8 Steel mesh wool 1	Electricity Kit Battery holders (for HP 2 cells) 12 Blubs 40 Bulb holders 20 Resistance wire 1 Insulated copper wire 1 Bare copper wire 1 Push switches 8 Two-way switches 4 Variable resistors 4 Universal clips 8 Short leads 24 Long leads 8 Crocodile clips 8 Carbon electrodes 12 Copper sheet 1 Diodes 4 Resistor 4 Steel Rod 8 Steel mesh wool 1	Each	1	





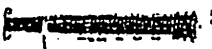
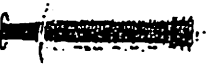
Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JS9	Electronics Kit Breadboard 1 12 way Terminal block 1 2.5V MES bulb 1 Bulb holder 1 Ultrabright red LED 1 Red LED 5 Yellow LED 5 Green LED 5 Light dependent resistor 1 Thermistor 1 BC547B transistor 2 1.5V buzzer 1 100uF capacitor 1 470uF capacitor 1 50kΩ preset potentiometer 1 470R resistor 5 1K resistor 5 10K resistor 5 Length of solid core wire 1 Length of stranded wire 1 Length of tinned wire 1 2AA battery box with switch 1 4AA battery box 1 Battery snap 1 Electric motor 2 Motor tag connectors 4 Length of silicone tube 1	Electronics Kit Breadboard 1 12 way Terminal block 1 2.5V MES bulb 1 Bulb holder 1 Ultrabright red LED 1 Red LED 5 Yellow LED 5 Green LED 5 Light dependent resistor 1 Thermistor 1 BC547B transistor 2 1.5V buzzer 1 100uF capacitor 1 470uF capacitor 1 50kΩ preset potentiometer 1 470R resistor 5 1K resistor 5 10K resistor 5 Length of solid core wire 1 Length of stranded wire 1 Length of tinned wire 1 2AA battery box with switch 1 4AA battery box 1 Battery snap 1 Electric motor 2 Motor tag connectors 4 Length of silicone tube 1	Each	9	



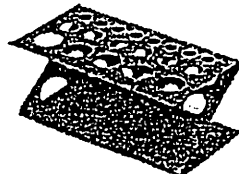
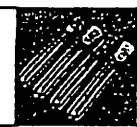

Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
	Pair of plastic tweezers 1 Metal screw 1 Solar Cell 1 Plastic storage box 1 PN diodes 2 1K uF capacitor 1 Fan 1	Pair of plastic tweezers 1 Metal screw 1 Solar Cell 1 Plastic storage box 1 PN diodes 2 1K uF capacitor 1 Fan 1			
JS10	Evaporating Dish Easy to clean and safe to use for a variety of evaporating processes & ashing. Porcelain, with spout, deep form, inside outside glazed. Cap. 100 ml, outer dia 75 mm Product Dimensions: 8.5 x 8.5 x 3.5 cms, 65 g	Evaporating Dish Easy to clean and safe to use for a variety of evaporating processes & ashing. Porcelain, with spout, deep form, inside outside glazed. Cap. 100 ml, outer dia 75 mm Product Dimensions: 8.5 x 8.5 x 3.5 cms, 65 g	Each	5	
JS11	Filter Paper 12.5cm Pack of 100 Circles WHATMAN No.1 equivalent	Filter Paper 12.5cm Pack of 100 Circles Premium quality filter paper for use in labs. WHATMAN No.1 equivalent	Pack	4	
JS12	Funnel Filter Plastic Polythene, unaffected by acids, alkalies etc. Dia. 75 mm, Stem Length 76 mm	Funnel Filter Plastic Polythene, unaffected by acids, alkalies etc. Dia. 75 mm, Stem Length 76 mm	Each	10	




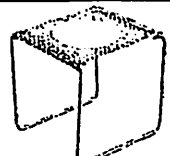
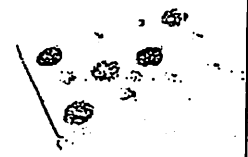
Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JS13	Iron Filings Fine iron fillings in sprinkler jar	Iron Filings Fine iron fillings in sprinkler jar	Pack	4	
JS14	JHS Mapped Activity Manual Minimum 100 Page A4 manual. Full colour printing throughout. Includes training activities, comprehensive classroom activity set and printable classroom resources. Specifically linked to Ghana JHS syllabus objectives and BSTEM Regional Advisor Training Programme.	JHS Mapped Activity Manual Minimum 100 Page A4 manual. Full colour printing throughout. Includes training activities, comprehensive classroom activity set and printable classroom resources. Specifically linked to Ghana JHS syllabus objectives and BSTEM Regional Advisor Training Programme.	Each	1	
JS15	Leads Red/Black with Croc-clips Insulated with crocodile clip at both ends, for 4 mm plug. Length 750 mm, Black x10, Red x10	Leads Red/Black with Croc-clips Insulated with crocodile clip at both ends, for 4 mm plug. Length 750 mm, Black x10, Red x10	Each	20	
JS16	Litmus Paper – Blue In plastic container of 5 books each with 20 strips of size 63.5 x 10 mm wide approx	Litmus Paper – Blue In plastic container of 5 books each with 20 strips of size 63.5 x 10 mm wide approx	Books	5	
JS17	Litmus Paper – Red In plastic container of 5 books each with 20 strips of size 63.5 x 10 mm wide approx	Litmus Paper – Red In plastic container of 5 books each with 20 strips of size 63.5 x 10 mm wide approx	Books	5	

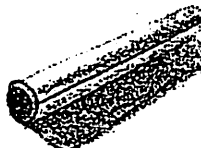


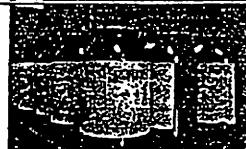

Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JS18	<p>Magnet Kit</p> <p>Plotting compass 10</p> <p>Horseshoe 1</p> <p>Black Bar magnet 2</p> <p>Red/Blue bar magnet 2</p> <p>Magnadur 3</p> <p>Cylindrical 2</p> <p>Field trays 2</p> <p>Ring magnets 3</p> <p>Range of metals 1</p> <p>Coloured iron balls 5</p>	<p>Magnet Kit</p> <p>Plotting compass 10</p> <p>Horseshoe 1</p> <p>Black Bar magnet 2</p> <p>Red/Blue bar magnet 2</p> <p>Magnadur 3</p> <p>Cylindrical 2</p> <p>Field trays 2</p> <p>Ring magnets 3</p> <p>Range of metals 1</p> <p>Coloured iron balls 5</p>	Pack	2	
JS19	<p>Magnets (Bar)</p> <p>100 x 12 x 5 mm</p> <p>Chrome steel magnets</p> <p>Perform a variety of activities and experiments involving magnetism</p> <p>Low magnetic strength for careful experiments, Red/Blue</p>	<p>Magnets (Bar)</p> <p>100 x 12 x 5 mm</p> <p>Chrome steel magnets</p> <p>Perform a variety of activities and experiments involving magnetism</p> <p>Low magnetic strength for careful experiments, Red/Blue</p>	Each	20	
JS20	<p>Masses 100g</p> <p>9x 100g on hanger of 100g</p> <p>Zinc die casted, powder coated and accuracy ±2%</p>	<p>Masses 100g</p> <p>9x 100g on hanger of 100g</p> <p>Zinc die casted, powder coated and accuracy ±2%</p>	Set	4	
JS21	<p>Measuring Cylinder Plastic 100ml</p> <p>Polypropylene. Single piece, autoclavable, graduated and have excellent contact clarity. Base provides good stability.</p> <p>Capacity: 100 ml, Graduation: 1.0 ml</p>	<p>Measuring Cylinder Plastic 100ml</p> <p>Polypropylene. Single piece, autoclavable, graduated and have excellent contact clarity. Base provides good stability.</p> <p>Capacity: 100 ml, Graduation: 1.0 ml</p>	Each	10	

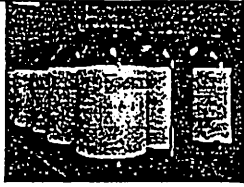




Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JS22	Measuring Cylinder Plastic 250ml Polypropylene. Single piece, autoclavable, graduated and have excellent contact clarity. Base provides good stability. Capacity: 250 ml, Graduation: 2.0 ml	Measuring Cylinder Plastic 250ml Polypropylene. Single piece, autoclavable, graduated and have excellent contact clarity. Base provides good stability. Capacity: 250 ml, Graduation: 2.0 ml	Each	10	
JS23	Metal Rod Retort, Base, Clamp Stainless steel rod Powder coated support stand base 4-pronged, cork lined clamp and metal retort ring included	Metal Rod Retort, Base, Clamp Stainless steel rod Powder coated support stand base 4-pronged, cork lined clamp and metal retort ring included	Set	3	
JS24	Mirrors Kit Plane mirrors, Block 100x75mm 2 Stainless steel Concave Mirror 1 Stainless steel Convex Mirror 1 Lenses (convex/concave 10cmFL) 2	Mirrors Kit Plane mirrors, Block 100x75mm 2 Stainless steel Concave Mirror 1 Stainless steel Convex Mirror 1 Lenses (convex/concave 10cmFL) 2	Set	3	
JS25	Optical Pins Nickel plated iron, heavy gauge. Pack of 100	Optical Pins Nickel plated iron, heavy gauge. Pack of 100	Pack	1	
JS26	Petri Dish Plastic 90mm	Petri Dish Plastic 90mm	Each	20	

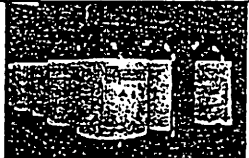
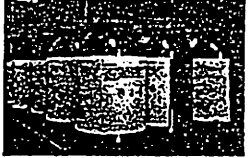
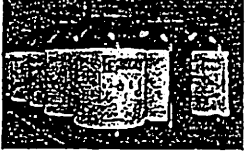
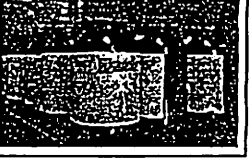
Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JS32	Spring Balances 500g Plastic, tubular Newton spring balances. Each range is colour coded for convenience and is scaled in both grams and Newton's. The spring mechanism is clearly visible, and zero adjustment is incorporated. Cap.: 500gm / 5N	Spring Balances 500g Plastic, tubular Newton spring balances. Each range is colour coded for convenience and is scaled in both grams and Newton's. The spring mechanism is clearly visible, and zero adjustment is incorporated. Cap.: 500gm / 5N	Each	10	
JS33	Stirrer (Plastic, Hand) Polypropylene, useful for stirring different solutions in laboratory. Dia 10mm x L 250mm.	Stirrer (Plastic, Hand) Polypropylene, useful for stirring different solutions in laboratory. Dia 10mm x L 250mm.	Each	10	
JS34	Stoppers Assorted 10 x 0 hole, 10x 1 hole, 10x 2 hole	Stoppers Assorted 10 x 0 hole, 10x 1 hole, 10x 2 hole	Each	1	
JS35	Stopwatch Digital Quartz timer, showing normal time, hours, minutes, seconds. Days, dates, months are displayed, 1/100th second, with alarm	Stopwatch Digital Quartz timer, showing normal time, hours, minutes, seconds. Days, dates, months are displayed, 1/100th second, with alarm	Each	10	
JS36	Syringes re-useable 10ml Sterilized, Plastic, individual pack and graduated with Luer fitting.	Syringes re-useable 10ml Sterilized, Plastic, individual pack and graduated with Luer fitting.	Each	10	
JS37	Syringes re-useable 20ml Sterilized, plastic, individual pack and graduated with Luer fitting.	Syringes re-useable 20ml Sterilized, plastic, individual pack and graduated with Luer fitting.	Each	10	
JS38	Syringes re-useable 2ml Sterilized, plastic, individual pack and graduated with Luer fitting.	Syringes re-useable 2ml Sterilized, plastic, individual pack and graduated with Luer fitting.	Each	10	



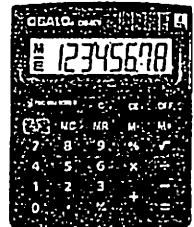

Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JS39	Syringes re-useable 5ml Sterilized, plastic, individual pack and graduated with Luer fitting	Syringes re-useable 5ml Sterilized, plastic, individual pack and graduated with Luer fitting	Each	10	
JS40	Test-tube Holder Plated spring steel wire holder with finger grip. The jaws will accept tubes up to 40 mm diameter and their alignment maintained by a wire collar. Overall length 16 cm.	Test-tube Holder Plated spring steel wire holder with finger grip. The jaws will accept tubes up to 40 mm diameter and their alignment maintained by a wire collar. Overall length 16 cm.	Each	10	
JS41	Test-tube Rack Z' shape, made from 18-gauge aluminium sheet, anodized and 3 tier. With 5 holes of 23 mm dia., 6 holes of 20 mm dia. and 8 holes of 13 mm dia. Overall height of 75 mm and length of 200 mm	Test-tube Rack Z' shape, made from 18-gauge aluminium sheet, anodized and 3 tier. With 5 holes of 23 mm dia., 6 holes of 20 mm dia. and 8 holes of 13 mm dia. Overall height of 75 mm and length of 200 mm	Each	10	
JS42	Test-tubes 16x100mm, Plastic with Lids	Test-tubes 16x100mm, Plastic with Lids	Each	50	
JS43	Test-tubes 24x150mm, Glass Borosilicate glass 3.3, light wall, with rim, with strong resistance to heat and chemicals. Pack of 50 Cap. 50ml, 150x24mm	Test-tubes 24x150mm, Glass Borosilicate glass 3.3, light wall, with rim, with strong resistance to heat and chemicals. Pack of 50 Cap. 50ml, 150x24mm	Each	50	

Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JS44	Thermometer Yellow enamelled back and reinforced bulbs filled with Red / Blue spirit. Length 305 mm Range: -10 to 110°C Grad. 1°C Length 305 mm	Thermometer Yellow enamelled back and reinforced bulbs filled with Red / Blue spirit. Length 305 mm Range: -10 to 110°C Grad. 1°C Length 305 mm	Each	12	
JS45	Tongs General purpose tongs with bow, with corrugated jaws, used for handling of hot apparatus Length 20cm, Blackend Steel	Tongs General purpose tongs with bow, with corrugated jaws, used for handling of hot apparatus Length 20cm, Blackend Steel	Each	5	
JS46	Transparent Tubing 3mm bore 5mt length	Transparent Tubing 3mm bore 5mt length	Roll	2	
JS47	Stand with Wire Gauze for Spirit Burners Stand made of Stainless Steel wire, height 90 mm, fitted with ceramic centre iron mesh.	Stand with Wire Gauze for Spirit Burners Stand made of Stainless Steel wire, height 90 mm, fitted with ceramic centre iron mesh.	Each	10	
JS48	White Tile Spotted 12 Well spot plate Made of high-density polyethylene Wall thickness is 1.5mm Bright white colour allows easy of use to view reactions Plate is approximately 4.5" X 3.5" Wells hold approximately 1.5ml	White Tile Spotted 12 Well spot plate Made of high-density polyethylene Wall thickness is 1.5mm Bright white colour allows easy of use to view reactions Plate is approximately 4.5" X 3.5" Wells hold approximately 1.5ml	Each	10	


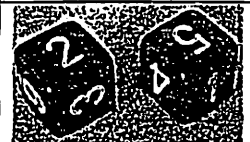

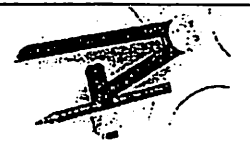
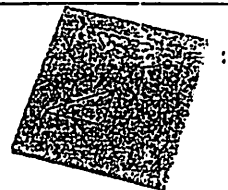
Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JC1	Aluminium Foil 30cm wide x 75M Long	Aluminium Foil 30cm wide x 75M Long	Large Roll	1	
JC2	Benedict's Solution (Qualitative) H412-EUH031 P273-P501a	Benedict's Solution (Qualitative) H412-EUH031 P273-P501a	500ml	1	
JC3	Calcium Chloride (Anhydrous) Formula CaCl_2 m.w. 110.98 Assay >95%	Calcium Chloride (Anhydrous) Formula CaCl_2 m.w. 110.98 Assay >95%	500g	1	
JC4	Calcium Hydroxide Formula Ca(OH)_2 m.w. 74.09 Assay >95%	Calcium Hydroxide Formula Ca(OH)_2 m.w. 74.09 Assay >95%	250g	1	
JC5	Copper Metal Turnings Formula Cu At. w 63.55 Assay >99%	Copper Metal Turnings Formula Cu At. w 63.55 Assay >99%	250g	1	


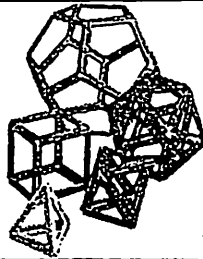
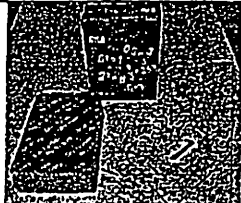
Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JC6	Copper Sulphate Copper (II) Sulphate Pentahydrate Formula $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ m.w. 249.68 Assay >99%	Copper Sulphate Copper (II) Sulphate Pentahydrate Formula $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ m.w. 249.68 Assay >99%	500g	1	
JC7	Hydrochloric Acid (1 Molar) Formula HCl m.w. 36.46 Concentration (20°C) 36.46g/L	Hydrochloric Acid (1 Molar) Formula HCl m.w. 36.46 Concentration (20°C) 36.46g/L	2.5L	1	
JC8	Iodine Solution Iodine solution with 1% potassium iodide Concentration 31.2g/L	Iodine Solution Iodine solution with 1% potassium iodide Concentration 31.2g/L	500ml	1	
JC9	Magnesium Ribbon Magnesium ribbon GLR Formula Mg At. w 24.31 Assay >99%	Magnesium Ribbon Magnesium ribbon GLR Formula Mg At. w 24.31 Assay >99%	25g	1	
JC10	2 x 1L Industrial denatured alcohol Industrial Methylated spirit Formula $\text{C}_2\text{H}_5\text{OH}$ & CH_3OH Total alcohols 98-99% w/w Weight per ml 0.790 – 0.792g	2 x 1L Industrial denatured alcohol Industrial Methylated spirit Formula $\text{C}_2\text{H}_5\text{OH}$ & CH_3OH Total alcohols 98-99% w/w Weight per ml 0.790 – 0.792g	1L	2	

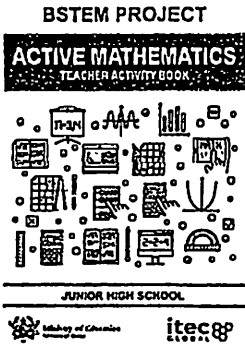
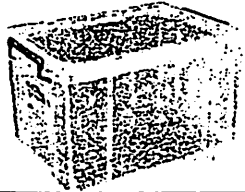

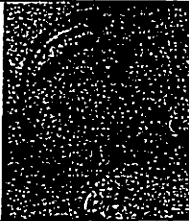
Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JC11	Sodium Hydrogen Carbonate Formula m.w. NaHCO ₃ 84.01 Assay >99.5%	Sodium Hydrogen Carbonate Formula m.w. NaHCO ₃ 84.01 Assay >99.5%	1KG	1	
JC12	Sodium Hydroxide Sodium Hydroxide Pearl Formula NaOH m.w. 40.00 Assay >99%	Sodium Hydroxide Sodium Hydroxide Pearl Formula NaOH m.w. 40.00 Assay >99%	1KG	1	
JC13	Universal Indicator pH4 - 11 pH 4.0 Red pH 5.0 Orange – Red pH 5.5 Orange pH 6.0 Orange – Yellow pH 7.0 Green – Yellow pH 8.0 Green pH 8.5 Blue – Green pH 9.0 Green – Blue pH 9.5 Blue pH 10.0 Violet pH 11.0 Violet - Red	Universal Indicator pH4 - 11 pH 4.0 Red pH 5.0 Orange – Red pH 5.5 Orange pH 6.0 Orange – Yellow pH 7.0 Green – Yellow pH 8.0 Green pH 8.5 Blue – Green pH 9.0 Green – Blue pH 9.5 Blue pH 10.0 Violet pH 11.0 Violet - Red	250ml	1	
JC14	Zinc Metal Zinc Granules Formula Zn At w 65.38 Assay >99% min	Zinc Metal Zinc Granules Formula Zn At w 65.38 Assay >99% min	500g	1	

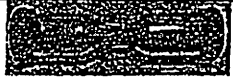


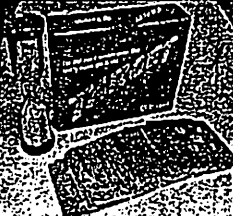
Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JM1	100 Cards A pack of 100 cards (57.5x89mm) with numbers 0 to 99 on high quality 300g art paper packed in a card tuck box.	100 Cards A pack of 100 cards (57.5x89mm) with numbers 0 to 9 on high quality 300g art paper packed in a card tuck box.	Pack	9	
JM2	360 Degree Protractor Hard plastic with rotating angle measuring arm. Packed as a set in high quality sealed transparent plastic box.	360 Degree Protractor Hard plastic with rotating angle measuring arm. Packed as a set in high quality sealed transparent plastic box.	Each	45	
JM3	Calculator (4 function with square root etc.) With solar cell. Packed individually in card boxes and supplied as a set of 45 MC, MR, M-, M+, %, $\sqrt{\quad}$, +/-, X, \div , +, -, =	Calculator (4 function with square root etc.) With solar cell. Packed individually in card boxes and supplied as a set of 45 in a card shipping box. MC, MR, M-, M+, %, $\sqrt{\quad}$, +/-, X, \div , +, -, =	Each	45	
JM4	Counters 20mm diameter high density plastic in eight colours. Packed as a set in high quality sealed transparent plastic box	Counters 20mm diameter high density plastic in eight colours. Packed as a set in high quality sealed transparent plastic box	Pack of 1000	1	

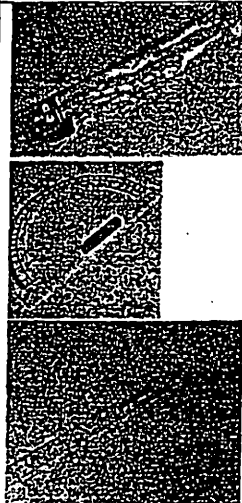

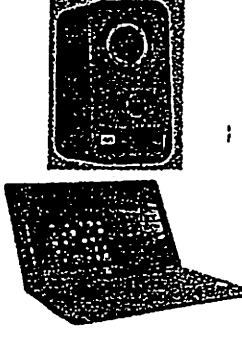
Basic Science, Maths, Engineering and Technology

Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JM5	Dice Multi (4,8,10,12,20 sides) Standard gaming size high density plastic in 5 different colours. Packed in sets in grip seal bags and all 15 sets packed as a set in high quality sealed transparent plastic box.	Dice Multi (4,8,10,12,20 sides) Standard gaming size high density plastic in 5 different colours. Packed in sets in grip seal bags and all 15 sets packed as a set in high quality sealed transparent plastic box.	Pack of 5	15	
JM6	Dice numeral (minimum 14mm) Large, minimum 14mm high density plastic, carved then printed for long life. Packed as a set in high quality sealed transparent plastic box.	Dice numeral (minimum 14mm) Large, minimum 14mm high density plastic, carved then printed for long life. Packed as a set in high quality sealed transparent plastic box.	Each	100	
JM7	Dice operator (minimum 14mm) Large, minimum 14mm high density plastic, carved then printed for long life. Packed as a set in high quality sealed transparent plastic box.	Dice operator (minimum 14mm) Large, minimum 14mm high density plastic, carved then printed for long life. Packed as a set in high quality sealed transparent plastic box.	Each	45	
JM8	Geared Compasses Hard plastic with self centering gearing mechanism. Including fitted half pencil. Packed as a set in high quality sealed transparent plastic box.	Geared Compasses Hard plastic with self centering gearing mechanism. Including fitted half pencil. Packed as a set in high quality sealed transparent plastic box.	Each	45	
JM9	GeoBoards (12x12) and Rubber Bands High quality high density plastic with accurate mushroom head pegs for excellent retention of bands. Sets of bands in various lengths and colours packed separately in high quality sealed transparent plastic box.	GeoBoards (12x12) and Rubber Bands High quality high density plastic with accurate mushroom head pegs for excellent retention of bands. Sets of bands in various lengths and colours packed separately in high quality sealed transparent plastic box.	Each	9	


Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JM10	<p>Geometric Solids (19 piece) Standard 19 piece set in wood. Packed in high quality sealed transparent plastic box. Cuboids (4): (different base: height ratio) inc cube Prisms (5): triangle x2, pentagonal, hexagonal, octagonal Cylinder (2): (different base: height ratio) Pyramids (2): square based, triangle based Cones (3): complete, oblique truncation to height, perpendicular truncation to base Sphere (1) Hemisphere (1) Spheroid (1) For size reference: cone height = 80mm, base diameter = 50mm</p>	<p>Geometric Solids (19 piece) Standard 19 piece set in wood. Packed in high quality sealed transparent plastic box. Cuboids (4): (different base: height ratio) inc cube Prisms (5): triangle x2, pentagonal, hexagonal, octagonal Cylinder (2): (different base: height ratio) Pyramids (2): square based, triangle based Cones (3): complete, oblique truncation to height, perpendicular truncation to base Sphere (1) Hemisphere (1) Spheroid (1) For size reference: cone height = 80mm, base diameter = 50mm</p>	Set	1	
JM11.	<p>Geometry Builder Kit 32 Equilateral Triangles, 12 Pentagons and 6 Squares. Multicolours. Packed in 300 micron grip seal bag for long life.</p>	<p>Geometry Builder Kit Polydron Frameworks Platonic Solids Set. 12 Pentagons and 6 Squares. Multicolours. Packed in 300 micron grip seal bag for long life. L x W x H (cm): 25 x 24 x 4 Weight (kg): 0.23</p>	Pack	9	
JM12	<p>GridLines Card Game 90 card (63x88mm) pack with full rules booklet in a card tuck box retail quality. Develops skills in surds, indices, rationals and whole number arithmetic.</p>	<p>GridLines Card Game 90 card (63x88mm) pack with full rules booklet in a card tuck box retail quality. Develops skills in surds, indices, rationals and whole number arithmetic.</p>	Pack	9	

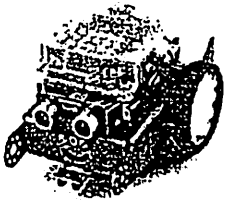



Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JM13	JHS Mapped Activity Manual Minimum 150 Page A4 manual. Full colour printing throughout. Includes training activities, comprehensive classroom activity set and printable classroom resources. Specifically linked to Ghana JHS syllabus objectives and BSTEM Regional Advisor Training Programme.	JHS Mapped Activity Manual Minimum 150 Page A4 manual. Full colour printing throughout. Includes training activities, comprehensive classroom activity set and printable classroom resources. Specifically linked to Ghana JHS syllabus objectives and BSTEM Regional Advisor Training Programme.	Each	1	
JM14	Large Plastic Storage Boxes 30ltrs. For storage of all items except the calculators and board equipment. Very high-quality design with perpendicular sides to base for maximum space efficiency. Integral handles which clip to lock the lid.	Large Plastic Storage Boxes 30ltrs. For storage of all items except the calculators and board equipment. Very high-quality design with perpendicular sides to base for maximum space efficiency. Integral handles which clip to lock the lid.	Each	2	
JM15	Mini Chalk Slate Very high quality, A4 sized, rigid frameless curved corner board design. Black on both sides. Very high-quality duster with rigid housing and felt pads. One box of 100 pieces of high quality classroom chalk.	Mini Chalk Slate Very high quality, A4 sized, rigid frameless curved corner board design. Black on both sides. Very high-quality duster with rigid housing and felt pads. One box of 100 pieces of high quality classroom chalk.	Each	45	
JM16	Ruler 30cm 30cm Unbreakable, shatterproof, design with bevelled edges and high rigidity. 2mm thickness.	Ruler 30cm 30cm Unbreakable, shatterproof, design with bevelled edges and high rigidity. 2mm thickness.	Each	45	

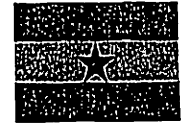
Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JM17	Sand Timers Very high quality. End diameter 25mm, length 96mm. Packed as a set in high quality sealed transparent plastic box.	Sand Timers Very high quality as per illustration. End diameter 25mm, length 96mm. Packed as a set in high quality sealed transparent plastic box.	Each	15	
JM18	Scissors (12RH/3LH) School safe rounded ends. Colour coded handles for left and right handedness. 40mm blades. Packed as a set in high quality sealed transparent plastic box.	Scissors (12RH/3LH) School safe rounded ends. Colour coded handles for left and right handedness. 40mm blades. Packed as a set in high quality sealed transparent plastic box.	Each	15	
JM19	Tape Measure 1.5m thick plastic tape measure 1.4mm wide. Packed as a set in high quality sealed transparent plastic box.	Tape Measure 1.5m thick plastic tape measure 1.4mm wide. Packed as a set in high quality sealed transparent plastic box.	Each	15	
JM20	Target Maths Card Game Packs A 120 card (70x70mm) pack with full rules booklet in a rigid storage to high retail quality. Includes its own 3 minute sand timer. Practices fast mental arithmetic skills by combining number sets to make given targets.	Target Maths Card Game Packs A 120 card (70x70mm) pack with full rules booklet in a rigid storage to high retail quality. Includes its own 3 minute sand timer. Practices fast mental arithmetic skills by combining number sets to make given targets.	Pack	9	

Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
JM21	<p>Teacher Board Equipment (Ruler, Compasses, Protractor) High density plastic, to high manufacturing tolerance and rigidity. Large plastic handles for ease of use.</p>	<p>Teacher Board Equipment (Ruler, Compasses, Protractor) High density plastic, to high manufacturing tolerance and rigidity. Large plastic handles for ease of use.</p>	Each	1	
ICT1	<p>Projector 3200 ANSI lumens, 2x HDMI, Connects to laptop, ICT2.</p>	<p>Projector 3200 ANSI lumens, 2x HDMI, Connects to laptop, ICT2.</p>	Each	1	
ICT2	<p>Laptop & Speakers Laptop, HP 250 G6 Core i5 7200U 500BG Hdd 15.6" 4GB DVD, windows 10 home. Speakers, Height x Width x Depth: 151.5 mm x 84.5 mm x 76 mm Weight: .55 Kg, Total Watt (RMS): 3W</p>	<p>Laptop & Speakers Laptop, HP 250 G6 Core i5 7200U 500BG Hdd 15.6" 4GB DVD, windows 10 home. Speakers, Height x Width x Depth: 151.5 mm x 84.5 mm x 76 mm Weight: .55 Kg, Total Watt (RMS): 3W</p>	Each	1	

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Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
ICT3	<p>Warranty (ICT1 & ICT2)</p> <p>In country team, on-site warranty within 5 working days for laptop software and projector hardware, accidental damage not included. Online (where internet allows) login and repair where possible.</p>	<p>Warranty (ICT1 & ICT2)</p> <p>In country on-site, warranty within 5 working days for laptop software and projector hardware, accidental damage not included. Online (where internet allows) login and repair where possible.</p>	Each	1	
ICT4	<p>Programming</p> <p>The BSTEM Portal, software package containing comprehensive training programmes for Scratch and Python, developmentally linked programming languages, in line with BSTEM Reginal advisor and JHS teacher training programme. Scratch offering drag-and-drop coding for beginner to intermediate level Python has school level entry to professional level in line coding.</p> <p>The Portal containing Installation files for both systems plus a structured collection of training with getting started video and text, step-by-step lessons in video and document formats, detailed reference manuals, and full books for further study.</p> <p>Linked to item JS14, JM13 and ICT6</p>	<p>Programming</p> <p>The BSTEM Portal, software package containing comprehensive training programmes for Scratch and Python, developmentally linked programming languages, in line with BSTEM Reginal advisor and JHS teacher training programme. Scratch offering drag-and-drop coding for beginner to intermediate level Python has school level entry to professional level in line coding.</p> <p>The Portal containing Installation files for both systems plus a structured collection of training with getting started video and text, step-by-step lessons in video and document formats, detailed reference manuals, and full books for further study.</p> <p>Linked to item JS14, JM13 and ICT6</p>	Each	1	<p>Screen Shot</p> 

Item	Requested Specifications	Offered Specifications	Unit	Qty per Site	Descriptive Picture
ICT5	Robotics Educational Robot: x5 Pre-set control modes Block-based programming Gamified Learning Main control board Light Sensor, Ultrasonic Sensor, Line Follower Sensor 2.4GHz USB 3.7V Lithium Battery / 1.5V AA Batteries x4 (not included) 170 * 130 *90mm (L*W*H) assembled 1034g assembled Me RJ25 Adapter V2 X1 Add-on Pack Interactive Light & Sound X1 Add-on Pack - Servo Pack X1 6P6C RJ25 cable-20cm (4-Pack) X1 6P6C RJ25 cable-35cm (4-Pack) X1 6P6C RJ25 cable-50cm (Pair) X1 Add-on Pack - Six-legged Robot X1	Robotics Educational Robot: x5 Pre-set control modes Block-based programming Gamified Learning Main control board Light Sensor, Ultrasonic Sensor, Line Follower Sensor 2.4GHz USB 3.7V Lithium Battery / 1.5V AA Batteries x4 (not included) 170 * 130 *90mm (L*W*H) assembled 1034g assembled Me RJ25 Adapter V2 X1 Add-on Pack Interactive Light & Sound X1 Add-on Pack - Servo Pack X1 6P6C RJ25 cable-20cm (4-Pack) X1 6P6C RJ25 cable-35cm (4-Pack) X1 6P6C RJ25 cable-50cm (Pair) X1 Add-on Pack - Six-legged Robot X1	Set	1	 
ICT6	Datalogging to work alongside ICT5 Temperature Sensor-Waterproof: X3 PIR Motion Sensor V1: X1 LED Matrix 8 x 16: X1 7-Segment Serial Display – Red X2	Datalogging to work alongside ICT5 Temperature Sensor-Waterproof: X3 PIR Motion Sensor V1: X1 LED Matrix 8 x 16: X1 7-Segment Serial Display – Red X2	Set	1	 



Project Vehicles

Technical Specifications B.S.T.E.M.

Basic Science, Maths, Engineering and Technology

Ministry of Education 2018

As part of the Infrastructure and project rollout Itec Global will supply 4 vehicles. Minimum Specifications are detailed below. The most appropriate specification from the manufacture will be achieved at the time of supply and maybe subject to change.



TECHNICAL SPECIFICATIONS

Consumption

Approximate Fuel consumption - Urban (mpg)	32.5 - 41.6	Approximate Fuel consumption - Extra-Urban (mpg)	46.3 - 47.9
Approximate Fuel consumption - Combined (mpg)	41.0 - 44.9	Maximum CO2 emissions - Combined (g/km)	233

Engine Category

cc	Minimum 2,298	PS / RPM	190 / 3,750
L	Minimum 2.2L	Number of gears	Minimum 6-speed
Fuel Type	Diesel	Max engine torque, Nm / rpm	450 / 1,500 - 2,500

EQUIPMENT SPECIFICATIONS

Comfort & Convenience

Air conditioning

Rear ventilation

Pollen filter

Trip computer

Front electric windows

Electrically adjustable door mirrors

Heated door mirrors with LED turn indicators

Front heated seats

Daytime Running Lights

Automatic headlights

Cruise control and speed limiter

External temperature sensor

Multifunctional Steering wheel

Rear electric windows

Electric folding door mirrors

Adjustable driver seat with lumbar adjustment

Full LED headlights

LED Daytime Running Lights

Front fog lights

Minimum 17" Alloy Wheels

Exterior Styling

C-Channel moveable tiedown points

Load restraint hooks

Body coloured front bumper

Chrome front grille

Chrome door mirrors

Chrome wheel nuts

Side steps

Tailgate spoiler

Mudguards (front and rear)

Chrome rear step bumper

Chrome door handles

Door step lights

Rear privacy glass

Roof rails

Audio & Navigation

AM/FM/CD audio system

4 speakers

AUX socket for MP3 player

DAB Digital Radio

Bluetooth® audio streaming

Bluetooth® telephone integration

USB port

Touchscreen

Smartphone App Integration

Steering wheel mounted audio controls

Interior Styling

3x 12V power sockets

Front armrest

Chrome interior door handles

Leather steering wheel

Leather gear knob and handbrake

Safety & Security

ABS with EBD and Brake Assist

Forward Emergency Braking

Vehicle Dynamic Control (VDC)

Hill Start Assist

Hill Descent Control

Electronic Limited-Slip Differential (eLSD) with cut-off

Driver, passenger, side, curtain and driver knee airbags

Passenger airbag cut off switch

Automatic dimming rear view mirror

Rear parking sensors

Rear ISOFIX childseat anchorage points

3 adjustable rear head restraints

Thatcham approved alarm system

Anti Theft System immobiliser

Remote central door locking

Locking wheel nuts

Spare wheel lock

16" Steel spare wheel

APPENDICES

APPENDIX A
(TERMS OF REFERENCE)

Appendix A

TERMS OF REFERENCE

SUPPLY AND INSTALLATION OF EDUCATIONAL EQUIPMENT AND TRAINING IN BASIC SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS EDUCATION (BSTEM)

1.0 BACKGROUND

Over many years, the Government of Ghana has endeavoured to expand access to basic education for all children through the commitments such as Education for All (EFA), MDGs and FCUBE. Some good progress has been made with enrolments increasing substantially through the introduction of the capitation grant, the school feeding programme, the free school uniform and the free text and exercise books programme. The 2012 Educational Sector Review Report supports this by indicating that actual enrolment expenditure has increased.

Despite increased enrolment, the quality of education in the basic schools continues to be a source of concern to the Ministry of Education and Ghana as a whole. For example, primary completion rates are still low, there is a decreasing trend in transition rate from P6 to JHS1 and only 46% of students who took the BECE were admitted to SHS.

In addition, performance in science and mathematics at BECE continues to be low. The 2011 National Education Assessment (NEA) results indicate that proficiency levels in mathematics and English at primary level are extremely low, especially in the rural areas. JHS2 student's performance in the Trends in International Mathematics and Science Study (TIMSS) since 2003 has shown weakness in investigative work, practical activities, ability to comprehend and solve higher order questions among others.

Additionally, 50% of teachers in the basic school still remain untrained and therefore have some difficulties in bringing about effective learning in Basic Science Technology Engineering and Mathematics (BSTEM) education.

The problem is exacerbated by a lack of a strategic approach to science and mathematics education and poor facilities generally.

These challenges are adversely affecting not only the delivery of basic education in the country but also the student's future ability to succeed in SHS when the foundations of their education are not as firm as is required for further study. It is with these factors in mind, therefore, that Ministry of Education is undertaken the development of BSTEM education in Ghana.

2.0 OBJECTIVES

The specific objectives are:

- To improve the pedagogy of teaching of science and maths education of all basic education school teachers
- To introduce engineering and technology education and effective pedagogy into the Basic Education curriculum
- To increase the accessibility of modern teaching methods within BSTEM education to all students and teachers
- To address the fear of teaching and learning mathematics at Basic Education level
- To introduce an investigative and inquiry-based approach to BSTEM teaching, in line with international best practice and the Ghanaian curriculum
- To provide a kit of effective BSTEM equipment matched to the curriculum at each educational level
- To ensure the project supports the Ministry of Education's other programmes to improve the teaching of BSTEM such as T-TEL, G-PASS
- To provide resources including open education resources to support and enhance the current textbooks in BSTEM
- To promote the importance of Science, Technology, and Mathematics (STEM) education in an increasingly technological world
- Equip teachers with the skills to support students with Special Educational Needs (SEN)
- To provide ICT equipment to improve the competency of both teachers and students at JHS level
- To introduce basic programming to JHS teachers and students to increase understanding of current and future technology

3.0 SCOPE OF SERVICES

The scope of work involves the supply and installation of Educational Equipment (Basic Science, Technology, Engineering and Mathematics) in Equipment and the provision of Training Services for 38,715 Basic Schools in Ghana. The list of schools is indicated in Schedule of Requirement/Appendix H

3.1 OUTCOMES

- Improved teacher subject knowledge of STEM subjects at Basic education level
- Inclusion of engineering and technology education at Basic Education level

- Well-trained, confident teachers equipped with modern pedagogical techniques and effective learning practices
- Improved student knowledge and understanding of modern BSTEM education
- Demystification of mathematics for the teaching and learning of mathematics
- Basic schools equipped with effective teaching and learning resources, and equipment for BSTEM
- Improved examination results of pupils currently attending Primary and JHS schools
- Improved pupil preparation for Senior High School
- Increased numbers of pupils enrolling in STEM electives in Senior High School
- Increased numbers of girls entering STEM electives at Senior High School
- Improved support and inclusion for students with Special Educational Needs
- Students better prepared for a technologically advanced and knowledge driven work place
- Improved ICT competency of teachers
- Improved capacity of students in ICT

3.2 PROJECT OUTLINE

In order to achieve the objectives of the Basic Science Technology Engineering and Mathematics (BSTEM) Project for the Ministry of Education (MOE), Ghana, the Supplier is expected to carry out the following:

- Development of a long term, strategic plan in association with the MoE to improve BSTEM education throughout the country
- Development of National Centres for BSTEM in the Greater Accra and the Ashanti region (preferably in teacher training institutions such as Colleges of Education or Teacher Training Universities). These will be centres for training and teacher innovation as well as the administration centres for BSTEM Project, and offices of the National Coordinators
- The Centres will be managed by an Advisory Board made up of representatives from MoE/Ghana Education Service, Colleges of Education, Heads of Basic schools and MMDAs
- Appointment of four National Coordinators (2 in Greater Accra and 2 in Ashanti), one each in Basic Science and one in Basic Mathematics, who will be responsible for the management of the Regional Advisors and the role-out of the training programme across the country. One of each subject will be appointed as lead Co-ordinator and will cover Technology and Engineering in their respective subjects
- Appointment of 25 science and 25 maths Regional Advisors who will be trained to roll out the in-service training to teachers across the country

- 10 Regional Centres will be set up at a later date, and linked to the National Centres. These will be smaller centres but will have the required Science and Maths kits for teacher training and equipment
- The Regional Centres will concentrate on teaching and learning within their regions acting as satellites to the National Centres. A local committee will liaise with the National Centres and oversee the regional developments and the running of the centre.
- Provision of transport for consultants and coordinators to enable efficient and effective roll out of the programme.
- Production of equipment lists for BSTEM
- Curriculum development and production of worksheets and activity books *Basic Science, Technology, Engineering and Mathematics Education Itec Global – Solutions for Education*
- Development of training programme for BSTEM Regional Advisors
- Development of training programme for BSTEM teachers
- Introduction of strategies for teachers to better support student with special educational needs
- Schedule of equipment supply and of training programmes.
- On-going project monitoring and evaluation during the programme
- Post project support and advice
- Warranties and technical support
- Prepare Final Report for submission to the Employer

3.3 SUBJECT PROGRAMMES

3.3.1 BASIC SCIENCE PROGRAMME

The aim of the development of this aspect of the project would be to support teachers to improve teaching and learning in science by:

- Developing classroom dialogue with discussion and questioning strategies plus pair and group work.
- Using active learning strategies to improve motivation and to make learning fun.
- Using hand-on practical activities and effective demonstrations to support the understanding of science concepts.
- Using experimental work to develop practical and investigative skills, including data handling and planning.

The mechanisms used to achieve this would be:

- Regional advisors will be inducted in using a training pack through face-to-face, train-the-trainer sessions at regional level, followed by a roll-out at local level

- Regional advisors to be trained and used as coaches to support teachers in their classrooms.
- Provision of a kit of science equipment for teachers and students.
- The use of a teacher's manual of practical activities using the equipment provided, which will complement existing text books.

Each classroom would be equipped on the basis of classes of 45 students:

- Science equipment to allow class activities as well as teacher demonstration.
- New resources to support the equipment, and complement and enhance the syllabus and existing text books.
- Equipment that would allow students to develop a range of practical and investigative skills.
- Equipment and resources that will encourage students to enjoy science so they are motivated to do well in the subject and to continue studying it at SHS level.
- Equipment and resources that will ensure students have concrete, practical experiences that will enrich and enhance their understanding of the subject.
- Equipment and resources would prepare students for paper 3 of the BECE examination, which assesses practical skills.

3.3.2 BASIC MATHEMATICS PROGRAMME

The aim of this aspect of the project would be to support to teachers to demystify mathematics by:

- Solving real-life problems in local and global settings.
- Supporting the integration of mathematics into BSTEM initiatives including the development of programming skills.
- Using mathematical games, puzzles and active learning strategies to make learning more fun.
- Developing classroom dialogue with discussion and questioning strategies, using pair and group work.
- Developing mathematical and general thinking skills with open, exploratory problem solving.
- Supporting visualisation of mathematical ideas with hands-on practical work with physical materials.

The mechanisms used to achieve this would be:

- Regional Advisors will be inducted into using a training pack with face-to-face, train-the-trainer training sessions at regional level followed by a roll out at local level

- Regional Advisors to be trained and used as coaches to support teachers in their classrooms.
- Provision of a kit of maths equipment for teachers and students/classes. ...
- The use of a parallel text of syllabus linked classroom activities using the equipment kit with teacher support and student materials.

Each classroom would be equipped on the basis of 45 students:

- The Maths equipment would come with a specially written book of activities using all the equipment. This would act as a parallel text to the syllabus and existing text books.
- Materials to support high quality classroom teaching: teacher drawing equipment and measuring equipment.
- Materials to ensure all students can produce high quality work: calculators, 30cm ruler, 360° protractor and pairs of compasses with a gearing mechanism.
- Mini chalk boards to support and encourage in-class formative assessment and assessment for learning (AfL) strategies.
- Geoboards that will support a range of exploratory maths activities.
- A large quantity of different types of materials for kinaesthetic activities e.g. counters and dice, from which a large quantity of game/activities can be designed
- Geometry equipment to support 3D visualisation. Fast paced, exciting Number and Maths skills games (GridLines and Target Maths) to develop confident calculation strategies.

3.3.3. INTRODUCING ENGINEERING AND TECHNOLOGY PROGRAMME

The aim of the development of this aspect of the project would be to support teachers to introduce basic skills in Engineering and Technology that would complement existing syllabi in Science, Maths, ICT and Design and Technology :

- Developing programming skills and use these to automate the control of robotic machines.
- Using data logging sensors to generate data in maths and science experiments and use software systems for data analysis.
- Using active learning strategies to improve motivation and to make learning fun, both during formal lessons and in cocurricular STEM clubs.
- Developing problem solving skills engaging in engineering and scientific practical applications using locally available materials.

The mechanisms used to achieve this would be:

- Regional advisors will be inducted in using a training pack through face-toface, train-the-trainer sessions at regional level, followed by a roll-out at local level

- Regional advisors to be trained and used as coaches to support teachers in their classrooms.
- Provision of a kit of ICT, including computing, robotics and data logging equipment for teachers and students.
- The use of a teacher's manual of practical activities using the equipment provided and locally available materials, which will complement existing text books.

Each school would be equipped with the following :

- ICT equipment to allow teachers to enrich their teaching using multimedia visual presentations, including data logging equipment to generate live experimental data engaging the whole class.
- Educational robotics kits for engineering applications and the development of programming skills, for group work in the classroom or in a STEM club.
- New resources to provide ideas and instructions for the use of the ICT, robotics and data logging equipment provided and for additional practical problem-solving activities using locally available materials.

3.4 TEACHER TRAINING

3.4.1 TEACHER TRAINING PROGRAMME

Consultants should be in-country for a period prior to the start of the courses to ensure all preparations are complete prior to the start of training. There should be an initial training course of two weeks, for each subject area at JHS level. It should be designed and designated for the National Co-ordinators and Regional Advisors who will become the core training team. This core cohort would be a group of 50 Regional Advisors (25 maths and 25 science trainers) including the National Co-ordinators who will support the new programme and thus provide an effective developmental team.

It is also required that a further group from the regions should be trained within the National or local centres at a later date i.e. year 2 and 3 of the project for primary and kindergarten level. These will form part of the regional training teams whose roll it will be, together with the original core group, to run training programmes for local BSTEM teachers, as numbers involved expand. Their function will also be to carry out a regular supportive role in their local schools and communities, to include monitoring and evaluation.

The two academic consultant shall continue to support the programme, offer advice, support and assist with monitoring and evaluation programmes.

The Science, Mathematics and Introducing Engineering and Technology training shall be based on developing the pedagogy of modern BSTEM teaching, through investigative, and inquiry based activities and effective teaching practices.

The training shall complement the teaching practices taught in pre-service training for student teachers, and support the professional practice and professional knowledge standards within the National Teachers' Standards for Ghana.

The training will be supported by resources for BSTEM activities developed in agreement with the MoE and therefore compatible with and easily integrated into the Ghanaian BSTEM curriculum. A focus on Special Needs will form part of the programme.

The above initial programme will be followed by cascade in-service training sessions of five days, for JHS teachers across the districts. This cascade style training will be organised and run by the National Co-ordinators and delivered by the Regional

3.4.2 RESOURCES

There shall be a three-part development to the resource activities that links the national curriculum of Ghana to the equipment provided and the practical requirements of teacher training. In this way, the resources support the curriculum, the teachers and maximizes opportunities for investigative work.

As part of the project, the Supplier would supply resources adapted to the Ghanaian curriculum to all BSTEM Centres in the training programme. An electronic copy of these resources would be made available to the MoE for all other educational institutions involved in the programme. Improved pupil performance

3.4.3 NOTE ON SPECIAL EDUCATIONAL NEEDS (SEN)

Children with special educational needs all have learning difficulties or disabilities that make it harder for them to learn than most children of the same age. These children may need extra or different help from that given to other children of the same age.

Because Literacy, Numeracy and Basic Science are critical areas in children's educational development, during the training and developmental programmes for teachers in both Basic Science and Mathematics there will be a focus on how classroom teachers may address the problems associated with Special Needs.

Children with special educational needs may need extra help because of a range of needs, such as in:

- thinking and understanding, physical or sensory
- difficulties, emotional and behavioural difficulties,

- difficulties with speech and language
- how they relate to and behave with other people.

Many children will have special educational needs of some kind at some time during their education. Therefore special needs may be subject dependant, age related and/or transitory in some way, although for many it may also be a permanent disability. Schools and support organisations can help most children overcome the barriers their difficulties present, quickly and easily. But a few children will need extra help for some or all of their time in school. Special educational needs could mean that a child has difficulties with:

- all of the work in school;
- reading, writing, number work or understanding information
- expressing themselves or understanding what others are saying
- making friends or relating to adults
- behaving properly in school
- organising themselves
- some kind of sensory or physical needs which may affect them in school

BSTEM demands a wide range of skills of pupils whether they are special needs or not and therefore teachers have to:

- set suitable learning challenges
- respond to pupils' diverse learning needs
- overcome potential barriers to learning and assessment for particular individuals and group of pupils.

This will mean that they may have to:

- choose objectives for pupils with SEN and/or disabilities that are different from those of the rest of the group, or
- modify the curriculum to remove barriers so all pupils meet the same objectives
- plan for pupils with SEN and/or disabilities that is inclusive rather than a separate activity.

It doesn't need to be complicated or time-consuming. Teachers can simply jot down brief notes in your lesson plans on the learning objectives and approaches you will use to remove barriers for pupils with SEN and/or disabilities.

- Set personal targets for the pupil which may mean smaller steps to achieve the learning goal...or provide additional resources.
- Teachers should also think about the questions they will ask different groups and individuals and the ways they will check that pupils understand. Some pupils with SEN and/or disabilities will show they understand in different ways from their peers, so teachers should look at a range of opportunities for pupils to demonstrate what they know and can do.

3.5 PROJECT MANAGEMENT

Prior to the commencement of the project, the Supplier will provide the MOE with recommended specifications for refurbishment of the BSTEM Centre.

Throughout the Contract period, the Supplier will assume full responsibility for the purchase, supply, shipment, clearance and delivery to the BSTEM plus all teaching and Computer equipment contained within the project.

The Supplier will manage the curriculum development, curriculum resources and training plus all pre and post project advice, monitoring and evaluation of this project.

Phase shipments will be made to the project, based on agreed criteria at each stage. In association with the Ministry of Education, delivery and disbursement services, the Supplier will ensure delivery, installation and commissioning of equipment is carried out.

Equipment and computers will be installed in the appropriate laboratories for inspection.

Note: The above terms specifying the scope of services requested should not be regarded as exhaustive.

4.0 DURATION

The assignment is estimated to take five (5) years to complete.

5.0 REPORTING REQUIREMENT

The Consultant shall report to the Chief Director through Steering Committee and the Project Implementation Team of the Ministry of Education on all issues listed in the scope of service.

The Two Teams shall comprise of the following:

STEERING COMMITTEE

- | | | | |
|-------|------------------------------------|---|----------|
| i. | Deputy Minister, General Education | - | Chairman |
| ii. | Deputy Director General (Q&A) GES | - | Member |
| iii. | Director Procurement, MOE | - | Member |
| iv. | Director PBME, MOE | - | Member |
| v. | Director, FPMU | - | Member |
| vi. | Science Education Unit | - | Member |
| vii. | Reform Secretariat (MOE) | - | Member |
| viii. | Representative from NaCCA | - | Member |
| ix. | Supervision Consultants | - | Member |
| x. | Project Manager | - | Member |
| xi. | Science Professor | - | Member |
| xii. | Mathematics Professor | - | Member |

IMPLEMENTATION COMMITTEE

- i. ITEC Global
- ii. Ministry of Education
- iii. Ghana Education Service
- iv. Supervision Consultants

- v. Project Manager

The Employer's Supervision Consultants shall be responsible for the day to day supervision of the BSTEM project and shall report to the Project Implementation Team.

The Consultant will be required to prepare and submit to the Employer 5 (No.) Soft and Hard copies each of the following reports during the assignment.

- i) Inception Report
- ii) Year Progress Report
- iii) Draft Completion Report
- iv) Final Project Completion Report

5.1 CONTENT OF REPORTS

5.1.1 Inception Report

The Inception Report will be brief and concise; it will detail the progress on the assignment and indicate how it will be accomplished within the time schedule. It will also prompt the Employer on any likely problems and difficulties in successfully completing the assignment.

5.1.2 Yearly Progress Reports

The Yearly Progress Report will focus on summarizing the work done during the reporting period but shall briefly touch on other issues. A likely and acceptable table of content for the Progress Report is-

- ◆ An Executive Summary
- ◆ An Introduction and Background
- ◆ Brief summary of progress on assignment to date of reporting
- ◆ Detailed information on work done during the reporting period
- ◆ Training Programmes undertaken
- ◆ Personnel used during the reporting period (Training Programs)
- ◆ Status of Programme of Work [planned compared with actual]
- ◆ Payment made/ (invoices) issued, outstanding; cash flow and financial status of project

- ◆ Pending assignments and planned programme for next reporting period
- ◆ Project Related Issues and Implementation Challenges
- ◆ Progress Photos if any; communications, meetings etc.

5.1.3 Draft Completion Report

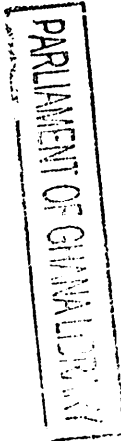
The Report shall be comprehensive on the executed works giving all necessary details at the end of Project Completion.

5.1.4 Final Project Completion Report

The Report shall be comprehensive on the executed works giving all necessary details at the end of the Warranty Period. It shall be accompanied by Operation and Maintenance manuals as received from the Manufacturers.

APPENDIX B
(KEY EXPERTS)

BSTEM Project: Roles of Consultancy Staff

Name	Area of Expertise	Position Assigned	Tasks
Chris Olley	Mathematics 	Mathematics Lead Consultant	<ul style="list-style-type: none"> • Task 1: Assessment of manufacturing of mathematics and technology equipment • Task 2: Visit UK-based and overseas mathematics and technology manufacturers at the beginning, middle and end of production and any additional visits as required • Task 3: Review the Mathematics Teacher Activity Book • Task 4: Review the Teacher Activity book for Technology and Engineering • Task 5: Review the Mathematics Trainer Guide • Task 6: Develop and plan the assessment of Regional Advisors in partnership with the Integrated Science Lead Consultant • Task 7: Attend meetings of the BSTEM steering committee as required • Task 8: Attend regional and/or district- based project stakeholder meetings to introduce BSTEM project • Task 9: To support, mentor and review the Mathematics National Coordinators and Regional Advisors throughout the project duration including up to two weeks additional top-up <i>Train the Trainer</i> training where necessary • Task 10: To attend training courses delivered by every 25 mathematics Regional Advisors to teachers on a regional basis to observe the Regional Advisors' training ability and delivery • Task 11: Provide guidance and support to Regional Advisors based on the observation of course delivery in regional areas

			<ul style="list-style-type: none"> • Task 12: Visit Junior High Schools to review and evaluate the uptake of BSTEM teacher training and equipment usage • Task 13: Research non-financial incentives to reward good teacher performance • Task 14: To write an internal quarterly review of the project including equipment used (including Technology), to support future years of the BSTEM Project in Ghana • Task 15: To write of an annual report on BSTEM project in collaboration with the other lead consultant
Dave Smith	Integrated Science and Biology	Integrated Science Lead Consultant	<ul style="list-style-type: none"> • Task 1: Assessment of manufacturing of science and engineering equipment • Task 2: Visit UK-based and overseas mathematics manufacturers at the beginning, middle and end of production and any additional visits as required • Task 3: Review the Science Teacher Activity Book • Task 4: Review the Teacher Activity book for Technology and Engineering • Task 5: Review the Science Trainer Guide • Task 6: Develop and plan the assessment of Regional Advisors in partnership with the Mathematics Lead Consultant • Task 7: Attend meetings of the BSTEM steering committee as required • Task 8: Attend regional and/or district- based project stakeholder meetings to introduce BSTEM project • Task 9: To support, mentor and review the Science National Coordinators and Regional Advisors throughout

			<p>the project duration including up to two weeks additional top-up <i>Train the Trainer</i> training where necessary</p> <ul style="list-style-type: none"> • Task 10: To attend training courses delivered by every 25 mathematics Regional Advisors to teachers on a regional basis to observe the Regional Advisors' training ability and delivery • Task 11: Provide guidance and support to Regional Advisors based on the observation of course delivery in regional areas • Task 12: Visit Junior High Schools to review and evaluate the uptake of BSTEM teacher training and equipment usage • Task 13: Research non-financial incentives to reward good teacher performance • Task 14: To write an internal quarterly review of the project including equipment used (including Technology), to support future years of the BSTEM Project in Ghana • Task 15: To write of an annual report on BSTEM project in collaboration with the other lead consultant
John Coad	Chemistry	Chemistry Subject Consultant	<ul style="list-style-type: none"> • Task 1: Review the Science and Mathematics Teacher Activity Book • Task 2: Review the Science and Mathematics Trainer Guide • Task 3: Meet and review assessments of Regional Advisors training capacities with Lead Consultants and Itec Global

			<ul style="list-style-type: none"> • Task 4: Review all quarterly internal and annual reports from Lead Integrated Science and Mathematics Consultants and provide feedback to Itec Global
Richard Patterson	Physics	Physics Subject Consultant	<ul style="list-style-type: none"> • Task 1: Review the Science and Mathematics Teacher Activity Book • Task 2: Review the Science and Mathematics Science Trainer Guide • Task 3: Meet and review assessments of Regional Advisors training capacities with Lead Consultants and Itec Global • Task 4: Review all quarterly internal and annual reports from Lead Integrated Science and Mathematics Consultants and provide feedback to Itec Global

APPENDIX C
(BREAKDOWN OF CONTRACT PRICE)

INVOICE FOR 5 YEAR BSTEM PROJECT

Item	Cost
Cost per Junior High School <ul style="list-style-type: none"> STEM equipment includes supply and 12 month warranty 	£ 4,330.00
TOTAL Equipment for Junior High Schools (9,905 schools)	£ 42,888,650.00
Cost per Primary School <ul style="list-style-type: none"> STEM equipment includes supply and 12 month warranty 	£ 1,280.00
TOTAL Equipment for Primary Schools (14,665 schools)	£ 18,771,200.00
Cost per Kindergarten School <ul style="list-style-type: none"> STEM equipment includes supply and 12 month warranty 	£ 320.00
TOTAL Equipment for Kindergartens (14,145 schools)	£ 4,526,400.00
<p>Project Infrastructure</p> <p>National Coordinators Costs – (2 Science National Coordinators and 2 Mathematics National Coordinators) to oversee the BSTEM programme, to be split between a Greater Accra and a Central offices.</p> <p>Ancillary and Support staff Costs(secretary and drivers) for National Coordinators at Greater Accra and Central offices:</p> <ul style="list-style-type: none"> 4 x salary and expenses for National Coordinators (2 x science coordinator, 2 x maths coordinator) 4 x travel and accommodation allowance for National Coordinators 4 x salary and expenses for Drivers (one per Coordinator) 4 x travel and accommodation allowance for drivers Fuel Allowance – MOE business only 2 x salary for Secretaries (one per National Centre) 2 x National Centre office costs 4 x ICT and communication costs for National Coordinators <p>4 x BSTEM Project Vehicles (including maintenance and servicing)</p>	<p>£ 1,485,000.00</p> <p>£ 620,000.00</p> <p>£ 40,000.00</p> <p>£ 350,000.00</p> <p>£ 200,000.00</p>

Training Programmes

Junior High School

Junior High School Teacher Training:

JHS STEM training courses (5 days duration) delivered by Regional Advisors to:

- 9,905 science teachers
- 9,905 mathematics teachers

£ 4,217,787.67

Primary School

Regional Advisors Primary Training programme:

£ 2,197,884.15

A 8 day training programme for 25 regional advisors, MOE staff and the National Coordinators, to familiarise them with new STEM pedagogy, training methods and equipment at Primary level.

Provision of Regional Advisors' Primary Training Guide

Primary School Teacher Training:

Primary STEM training courses, (3 days duration) delivered by Regional Advisors to:

- 14,665 primary teachers

Kindergarten

£ 902,328.18

Regional Advisors Kindergarten Training programme:

A 4 day training programme for 25 regional advisors, MOE staff and the National Coordinators, to familiarise them with new STEM pedagogy, training methods and equipment at Kindergarten level.

Provision of Regional Advisors' Kindergarten Training Guide

Kindergarten Teacher Training:

Kindergarten STEM training courses, (1 days duration) delivered by Regional Advisors to:

- 14,145 Kindergarten teachers

All Levels include
 BSTEM Activity Books for Trainers and Teachers
 Supervision and ongoing observation and development of
 Regional Advisors' course delivery by Itec Global subject
 Consultant

Daily subsistence and travel for delegates Accommodation for delegates where necessary Stationary pack for delegates	
Project Management and Services Project preparation, training courses supervision and evaluation Evaluation of annual programme Consolidation of future programme	£ 714,000.00
TOTAL for 5 Year Program	£ 76,913,250.00

Notes:

1. *Itec Global* is not responsible for provision of buildings, costs of buildings, furniture either for the training venues and the newly appointed Coordinator locations
2. *Itec Global* is not responsible for teachers and teacher trainers' salaries
3. MoE will provide the training venue at no cost to *Itec Global*
4. See separate, yearly invoices for detailed costs

Priced Components	£
Remuneration for Basic Services	151,200
Reimbursable Expenses	11,000
Miscellaneous Expenses	6,000
Total	168,200

PHASE 1	Name	Position	Task	Days	Rate	£	Total	£
	Dave Smith	Lead Science Consultant		1	5	600	3,000	
				2	21	600	12,600	
				3	2	600	1,200	
				4	1	600	600	
				5	2	600	1,200	
				6	3	600	1,800	
				7	3	600	1,800	
				8	3	600	1,800	
				9	12	600	7,200	
				10	38	600	22,800	
				11	12	600	7,200	
				12	10	600	6,000	
				13	2	600	1,200	
				14	4	600	2,400	
				15	2	600	1,200	
						Sub Total	72,000	
	Chris Olley	Lead Maths Consultant		1	5	600	3,000	
				2	21	600	12,600	
				3	2	600	1,200	
				4	1	600	600	
				5	2	600	1,200	
				6	3	600	1,800	
				7	3	600	1,800	
				8	3	600	1,800	
				9	12	600	7,200	
				10	38	600	22,800	
				11	12	600	7,200	
				12	10	600	6,000	
				13	2	600	1,200	
				14	4	600	2,400	
				15	2	600	1,200	
						Sub Total	72,000	
	John Coad	Science Consultant		1	2	400	800	
				2	2	400	800	
				3	1	400	400	
				4	4	400	1,600	
						Sub Total	3,600	
	Richard Patterson	Science Consultant		1	2	400	800	
				2	2	400	800	
				3	1	400	400	
				4	4	400	1,600	
						Sub Total	3,600	
						Total	£	151,200

Priced Components	£
Remuneration for Basic Services	126,600
Reimbursable Expenses	22,000
Miscellaneous Expenses	13,000
Total	161,600

	Name	Position	Task	Days	Rate £	Total £
PHASE 2	Dave Smith	Lead Science Consultant	1	5	600	3,000
			2	2	600	1,200
			3	2	600	1,200
			4	14	600	8,400
			5	1	600	600
			6	3	600	1,800
			7	3	600	1,800
			8	10	600	6,000
			9	6	600	3,600
			10	10	600	6,000
			11	2	600	1,200
			Sub Total		34,800	
	Chris Olley	Lead Maths Consultant	1	5	600	3,000
			2	2	600	1,200
			3	2	600	1,200
			4	14	600	8,400
			5	1	600	600
			6	3	600	1,800
			7	3	600	1,800
			8	10	600	6,000
			9	6	600	3,600
			10	10	600	6,000
			11	2	600	1,200
			Sub Total		34,800	
	TBC	Primary	1	5	600	3,000
			2	12	600	7,200
			3	10	600	6,000
			4	10	600	6,000
			5	3	600	1,800
			6	5	600	3,000
			7	1	600	600
			8	3	600	1,800
			9	5	600	3,000
			10	30	600	18,000
			11	4	600	2,400
			12	4	600	2,400
			13	2	600	1,200
			14	1	600	600
			Sub Total		57,000	
			TOTAL		126,600	

Priced Components	£
Remuneration for Basic Services	100,800
Reimbursable Expenses	22,000
Miscellaneous Expenses	13,000
Total	135,800

PHASE 2	Name	Position	Task	Days	Rate	£	Total	£
	Dave Smith	Lead Science Consultant		1	3	600	1,800	
				2	3	600	1,800	
				3	3	600	1,800	
				4	8	600	4,800	
				5	1	600	600	
				6	3	600	1,800	
				7	4	600	2,400	
				8	5	600	3,000	
				9	3	600	1,800	
				10	10	600	6,000	
				11	2	600	1,200	
						Sub Total	27,000	
	Chris Olley	Lead Maths Consultant		1	3	600	1,800	
				2	3	600	1,800	
				3	3	600	1,800	
				4	8	600	4,800	
				5	1	600	600	
				6	3	600	1,800	
				7	4	600	2,400	
				8	5	600	3,000	
				9	3	600	1,800	
				10	10	600	6,000	
				11	2	600	1,200	
						Sub Total	27,000	
	TBC	Kindergarten		1	5	600	3,000	
				2	6	600	3,600	
				3	6	600	3,600	
				4	5	600	3,000	
				5	1	600	600	
				6	5	600	3,000	
				7	1	600	600	
				8	3	600	1,800	
				9	5	600	3,000	
				10	30	600	18,000	
				11	4	600	2,400	
				12	4	600	2,400	
				13	2	600	1,200	
				14	1	600	600	
						Sub Total	46,800	
						TOTAL	100,800	

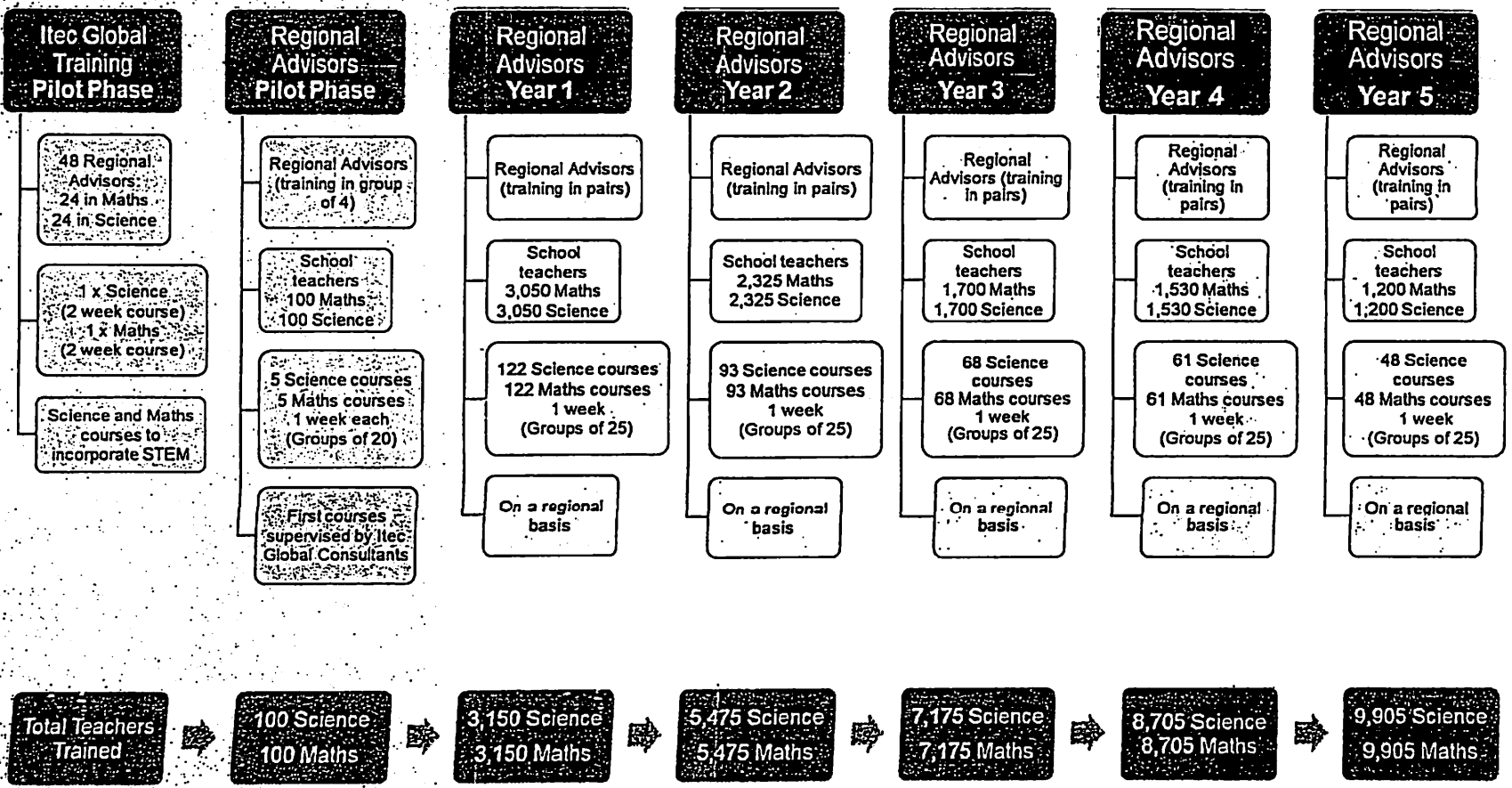
APPENDIX D
(PROGRAM OF WORK)

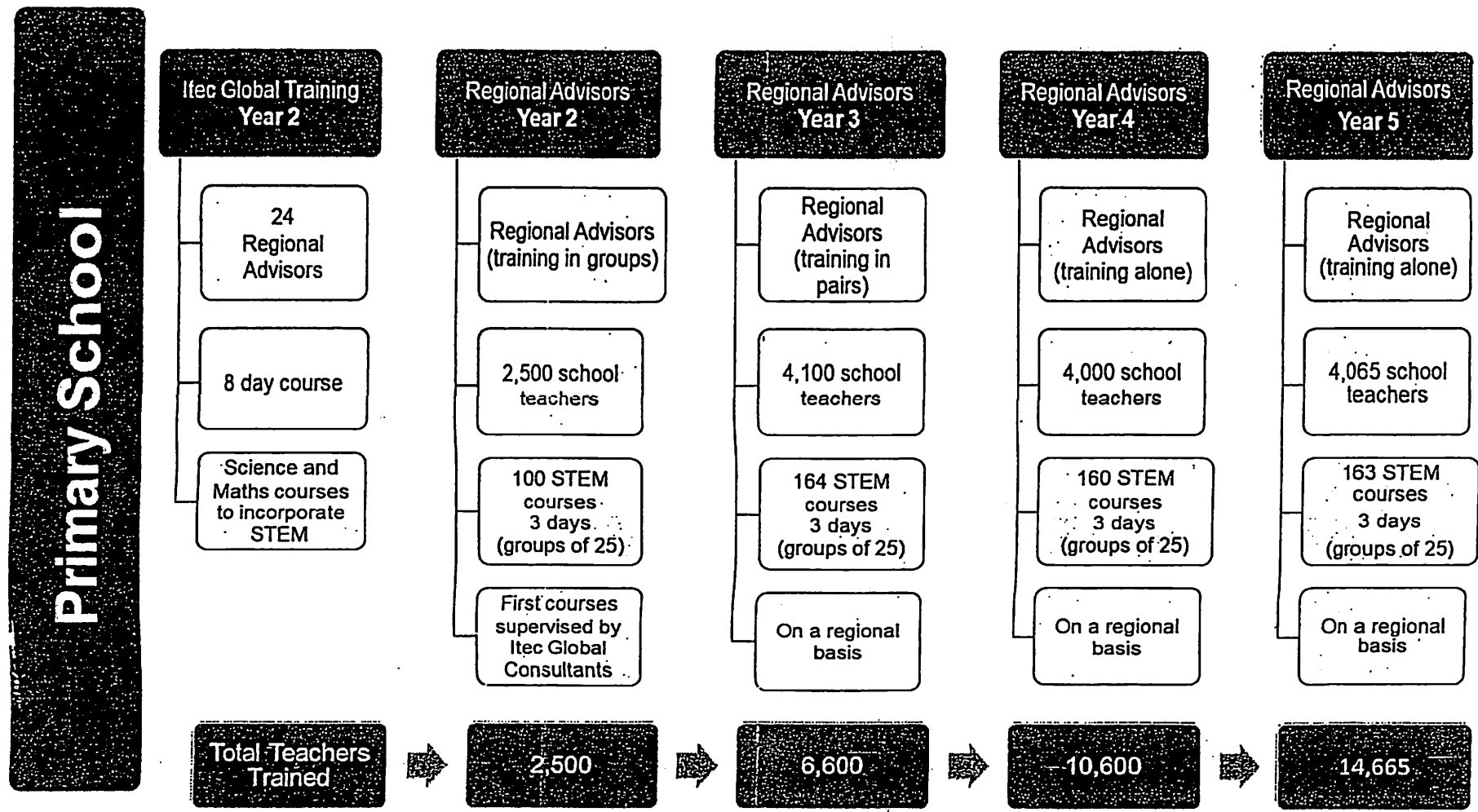
BSTEM Project: Timeline

Quarter	Task	Note
1	Conduct research mission for primary and kindergarten phases	Year 1 and 2 only
	Assessment of manufacturing of science, mathematics, technology and engineering equipment	
	Order all science, mathematics, technology and engineering equipment from suppliers for delivery to Tema Port, Ghana	
	Visit UK-based and overseas science, mathematics, technology and engineering equipment manufacturers at the beginning, middle and end of production and any additional visits as required	
	Development of Regional Advisor <i>Train the Trainer</i> training (primary and Kindergarten)	
	Revision (JHS)/Development (Primary and Kindergarten) of Trainer Guide	
	Development of <i>Teacher Training Course</i> (primary and kindergarten)	
	Revision (JHS)/Development (Primary and Kindergarten) of the Teacher Activity Book	
	Development and planning of assessment of Regional Advisors	
	Research non-financial incentives to reward good teacher performance	
	Provision of internal report	
	2	Establishment of 2 x BSTEM National Offices
Engagement of National Office support staff		Year 1 only
Selected schools informed of BSTEM project		
Location and training delivery programme planned and agreed		
Schools to attend regional and/or district- based project stakeholder meetings to introduce BSTEM project		
Equipment arrives Tema Port, Ghana		
Clear customs and move equipment to warehouse space from port		
Consolidation of equipment for delivery		
Delivery of <i>Train the Trainer</i> course (Primary and Kindergarten)		
Deliver equipment to regional hubs		
Schools instructed to collect equipment from regional hubs		
Schools collect equipment from Regional hubs and confirm teacher attendance at training course		

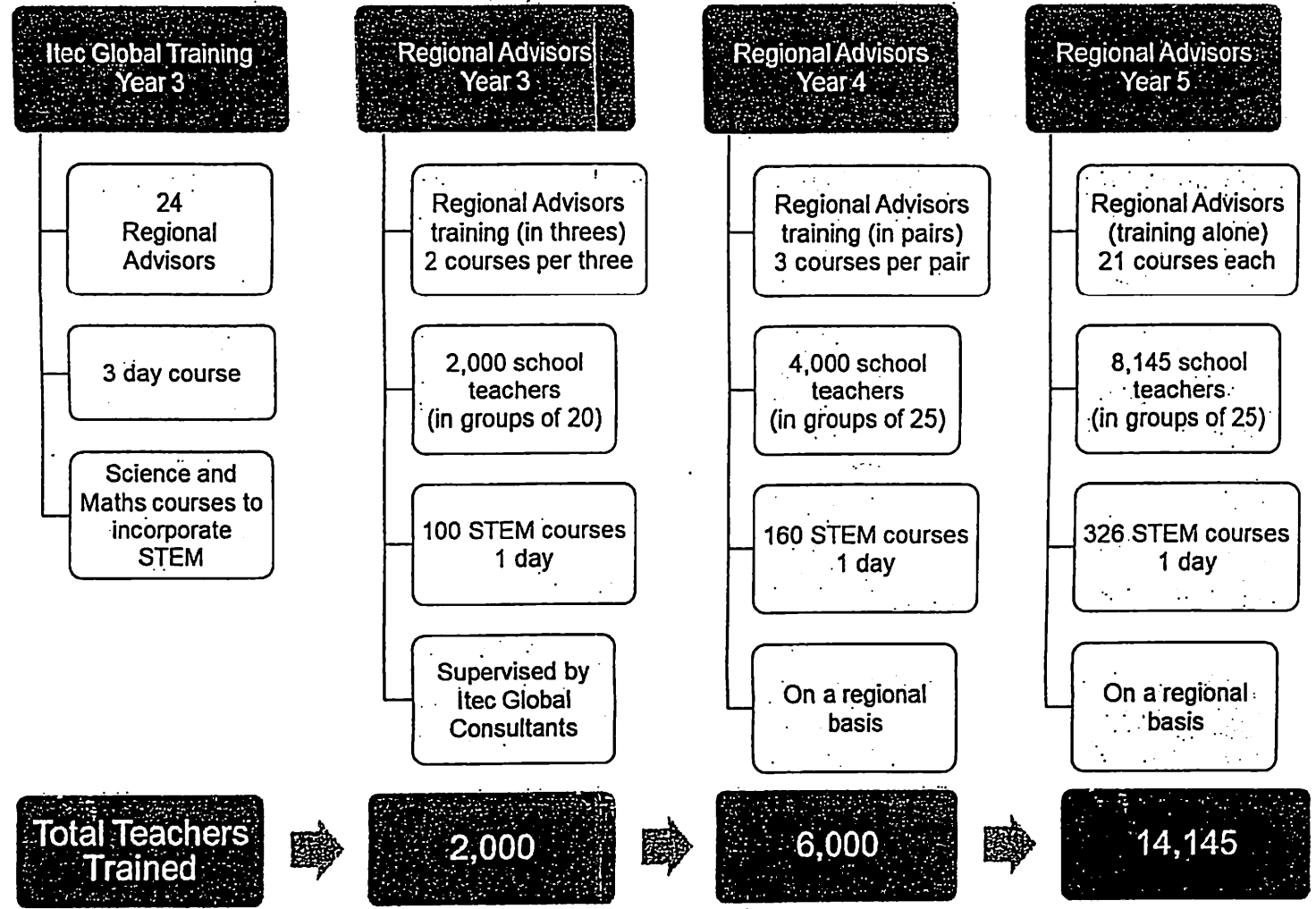
	Teachers attend BSTEM teacher training (as per diagrams below)	
	Lead consultants to observe, support, and review the National Coordinators and Regional Advisors during training delivery	
	Provision of internal report	
3	Deliver equipment to regional hubs	
	Schools instructed to collect equipment from regional hubs	
	Schools collect equipment from Regional hubs and confirm teacher attendance at training course	
	Teachers attend BSTEM teacher training (as per diagrams below)	
	Lead consultants to observe, support, and review the National Coordinators and Regional Advisors during training delivery	
	Lead consultants to provide top-up <i>Train the Trainer</i> training where necessary	
	Provision of internal quarterly report	
4	Establishment of 10 x BSTEM Regional Centres	Year 1 only
	Deliver equipment to regional hubs	
	Schools instructed to collect equipment from regional hubs	
	Schools collect equipment from Regional hubs and confirm teacher attendance at training course	
	Teachers attend BSTEM teacher training (as per diagrams below)	
	Lead consultants to observe, support, and review the National Coordinators and Regional Advisors during training delivery	
	Visit Junior High/Primary/Kindergarten Schools to review and evaluate the uptake of BSTEM teacher training and equipment usage	
	Provision of an internal quarterly report	
	Provision of an annual report on BSTEM project	

Junior High School





Kindergarten



APPENDIX E
(PERFORMANCE GUARANTEE)

APPENDIX F
(PPA'S APPROVAL)

PUBLIC PROCUREMENT AUTHORITY

PRIVATE MAIL BAG 30
MINISTRIES - ACCRA



REPUBLIC OF GHANA

Website: www.ppa.gov.gh
Email: info@ppa.gov.gh

19 November, 2018

In case of reply the
Number and date of this
Letter should be quoted.

Our Ref. No: PPA/CEO/11/2030/18

Tel: 0302-780140-6

Toll free: 0800-10070

ADDRESS: GL-128-5328

RE REQUEST FOR APPROVAL FOR THE MINISTRY OF EDUCATION TO CONTINUE WORKING WITH MESSRS. ITEC GLOBAL INTERNATIONAL TO EXTEND THE BASIC SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (BSTEM) PROGRAMME TO COVER ALL BASIC SCHOOL (38,715) IN THE COUNTRY

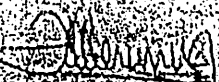
We refer to your letter no. FA 101/331/01, dated 12th November, 2018 on the above mentioned subject.

At the Board Technical Committee Meeting No. 19 (019/2018) held on Thursday, 15th November 2018, the Board granted approval to *Ministry of Education (MoE)*, in accordance with Section 40(1)(b) of Act 663 as amended, to engage the services of *Messrs. ITEC Global International* for the further expansion of the BSTEM Programme to equip all Basic Schools in the country with Science, Technology, Engineering and Mathematics Equipment at a total cost GH¢492,834,090.15.

The Board however directed that a discount of 5% be obtained from Messrs ITEC Global International for Business Continuity. The Approved Sum therefore is GH¢468,192,385.64.

You are required to ensure that all documentation regarding this procurement is appropriately kept to facilitate future procurement and tax audits and also you are reminded to post the contract award notice on the Public Procurement Website: www.ppa.gov.gh

We look forward to your co-operation.


ABADJET
CHIEF EXECUTIVE

THE HON. MINISTER
MINISTRY OF EDUCATION

ATTN: MR. LAW OSEVA B. WUM (MP)

APPENDIX G
(APPROVAL TO DENOMINATE CONTRACT IN
FOREIGN CURRENCY)

In case of reply the number and date of this letter should be quoted

Our Ref: NO B140/2018/MOE/BSTEM

Your Ref.....

Tel No.....



REPUBLIC OF GHANA

MINISTRY OF FINANCE

P. O. BOX MB 40

ACCRA

31/12/ , 2018

APPROVAL TO DENOMINATE CONTRACT IN FOREIGN CURRENCY

Please refer to your letter referenced F. A 101/331/01 and dated November 29, 2018 (copy attached).

2. Approval is hereby granted you to award the contract for the establishment of Basic Science Technology Engineering and Mathematics (BSTEM) in basic schools in Ghana in foreign currency.
3. You are reminded to ensure compliance with the Public Procurement Act, the Public Financial Management Act, 2016, (Act 921), and all other relevant Public Financial Management Laws, Rules and Regulations in the execution of programmes and operations covered by this release.
4. MDAs and MMDAs are to note that, henceforth the understated clause is required to be inserted in all Contracts/Agreements in order for them to be paid.

"Pursuant to Section 96(1) of the Public Financial Management Act, 2016 (Act 921), it is an offence to make an unauthorized commitment resulting in a financial obligation for the Government.

I [name of Contractor] understand and acknowledge that any unauthorized letter of guarantee or undertaking issued under this contract is unlawful, null and void ab initio, and is not legally binding on Government. I understand, acknowledge and agree that any judgment or garnishee order that may be issued in my favor as a result of a breach of this contract shall only be enforceable against MOE and shall not be enforceable against any other ministry, department or agency of the Government of Ghana that is not a party to this contract.

I understand that "unauthorized letter of guarantee or undertaking" means one that has not been approved by the Ministry of Finance."

5. Thank you.


KEN OFORI-ATTA
MINISTER

THE HON MINISTER
MINISTRY OF EDUCATION
ACCRA

Cc: The Hon. Dep. Ministers, MoF
The Chief Director, MoE
The Director of Budget, MoF
The Controller and Accountant-General, CAGD
The Auditor-General, Audit Service

149

of reply, the
per and date of this
should be
d.

Ref No: FA 101/331/01



Republic of Ghana

Ministry of Education
Ministry Branch Post Office
P.O. Box M 45
Accra

Ref No:

29th November 2018

THE HONOURABLE MINISTER
MINISTRY OF FINANCE
MINISTRIES - ACCRA



RE: COMMENCEMENT LETTER FOR THE ESTABLISHMENT OF BASIC SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS (BSTEM) PROGRAMME

We refer to your letter no. B.140/2018/MOE/STEAM/6 dated 29th October, 2018 in respect of the above subject.

The contents of the letter are well noted and the Ministry would endeavour to comply with it.

We note that the current cedi equivalent of the contract price of € 80,969,012.79 (as at October 2018) has been assessed as GH¢ 492,834,090.15

Given that this contract is for a term of 5 years and the equipment to be used are all imported and ITEC is a foreign company we wish to respectively refer this exceptional case to your good office for review to denominate the contract in foreign currency.

This will enable the cedi equivalent at the prevailing pound sterling/cedi exchange rate to be paid at the completion of each milestone of work.

We count on your usual cooperation.

DR. MATTHEW OPOKU PREMPEH (MP)
MINISTER

- CC: The Minister of State, MoE
- The Deputy Ministers, MoE
- The Deputy Minister Budget, MoF
- The Chief Director, MoE
- The Chief Director, MoF
- The Director Budget, MOF