

## **Description of Services for Standardized Achievement Test SAT-VI**

### **DETAILED TERMS OF REFERENCES (TORS)**

#### **BACKGROUND:**

The large scale standardized testing of individual students of Grades V and VIII is non-existent in the Sindh public education system. School tests are given to students but as these are not standardized it is difficult to identify whether the resulting scores are reliable and are valid indicators of the achievement of students. It also does not enable parents to assess the performance of their own child as compared to a national norm as there are no set standards or achievement levels/scales available in Sindh.

To rectify this, the Government of Sindh, Education & Literacy Department has introduced annual Sindh Standardized Achievement Testing.

The Sindh Standardized Achievement Test (SAT) is a nationally standardized test that report scores as percentiles, or as grade equivalents achievement scales and compares student test results to a national norm); it is an *achievement* test (one measuring subject knowledge and skills); and, includes a test on Mathematics, Sindhi/Urdu/English and Science .

SAT is planned to be used as a tool to provide policy information on various areas of education reform. Following are the key objectives:

- a. To link our mostly input driven reform agenda to output/outcomes.
- b. To use the process and results of SAT to affect attitudinal changes in teachers, for instance helping them to graduate from rote learning to active learning method that help to inculcate problem solving, critical thinking, communication inquiry and analytical skills in pupils. The results of the tests can also be used to review the curriculum/syllabus/textbooks of schools/teacher training colleges and teacher recruitment policies of various cadres and group of services.
- c. To inform parents, education administration, civil society and government and to gradually shift to result based accountability system.
- d. To inform policy makers, development partners, planners and implementers and to gradually move to evidence based policy making, planning and implementation.
- e. The purpose of the testing is to acknowledge achievers and help and support under achievers through planned inputs.
- f. To identify good districts and practices in order to learn and multiple the good practices to other districts.

#### **A- THE NEED FOR SAT :**

SAT tests provide information regarding individual students achievement acquired from experience and participation in learning during their school year. They provide information regarding the strengths and weaknesses of individual students on a national norm or standard and this should enable the teacher, curriculum developers, textbook writers, policy makers to develop plans and systems for improvements in the achievement of individual students.

SAT tests what students have learnt throughout the school year. The Sindh SAT will be based on the National Curriculum and the student learning outcomes identified in the National Curriculum. All Students of class V and VIII takes the entire achievement test battery of Language (School's medium of instruction), Mathematics and G. Science, which comprises of subject knowledge and skills, including 21<sup>st</sup> century and other appropriate national and global skills.

#### **B- THE DETAILS OF TORS ARE:**

##### **1. INCEPTION REPORT,VALIDATED TEST PAPER SPECIFICATIONS**

The SAT contracted third party is required to develop the following:-

##### **1.1 PROJECT INCEPTION REPORT**

The contracted firm will develop a detailed plan for strategies, designing of tools, areas to be addressed in achievement test for children and socio economic tools, validation and review and pilot testing of tools, collection of data from the field, reporting and analysis of data, implementing arrangements and monitoring mechanism along with the profiles of the personnel to be associated for all the deliverable in the field along with time lines.

##### **1.2 VALIDATED PAPER SPECIFICATION**

The firm will develop a report on " validated test paper specification" for each year (if contract is more than 1 year) based on the Sindh curriculum in the subject of Mathematics, General science and Languages (Sindhi ,Urdu and English) for classes V and VIII ). The test paper specification will be highlighting the competencies, skills and their weight age for upcoming Standardized Achievement Test. The third party is required to engage content and testing experts in the development and validation of the specification. The third party will to ensure a quality test paper specification which may cover the appropriate allocation to content areas, difficulty/ cognitive levels, appropriate skills, item format, time allocation, marks etc. This test paper specification should also be aligned with the curriculum standards, may also match with the recommended paper specification given

with the contract. The third party will share details on appropriateness and relevance of the paper specification obtained through expert validation.

#### **DELIVERABLES**

- (a) Inception report covering all aspects of the project*
- (b) Report on process of development of test, its specification, framework and review, expert validation and modification criterion.*
- (c) The list of expert validation committee and their profiles.*

#### **2. DEVELOPMENT AND REVIEW OF TEST ITEMS**

The SAT contracted firm is made responsible to develop and review the test items. The firm has to upload the finalized version of test items on SAT website and upgrade it to international standards, so that the online provision of quality test material may be provided to the teachers for their classroom assessments. The test items along with, stem, possible answers, and checking scheme, and detailed marking schemes are required to make them more user friendly. To assure the quality of items, fit for purpose and to avoid any bias the contracted firm is required to develop the items based on standard item development processes for quality items and item free from all possible bias. The items need to be developed by professionally trained test developers and 10% of the items need to be reviewed by test experts based on the criteria for quality item, fit or purpose i.e. Alignment of test item with the targeted difficulty/ cognitive level and cognitive domain and bias,

#### **DELIVERABLES**

- a) *Report on Development and review of test items according to, criteria adopted for quality items and establishment of web site*

#### **3. DEVELOPMENT AND REVIEW OF SOCIO ECONOMIC STATUS OF PARENTS, TEACHERS BACKGROUND QUESTIONNAIRES (TBQs) QUESTIONNAIRE FOR TEACHER'S, STUDENTS and PARENTS AND SCHOOL PROFILE**

SAT has another feature of collecting detailed background information from subject school teachers through Teacher back ground questionnaire (TBQ) , school profile with Head masters, students, and socio economic status of parents separately. Such information may be used to unfold the various trends of teaching and learning practices among public schools of the province.

The tools on the above will be developed by the contracted firm. The firm will develop and pilot the tools in terms of appropriateness of the information to be collected, their relevance,, language, structure, length and instructions to collect the reliable data. The number of copies will be printed as

per sampling provisions. These tools be based on the areas as mentioned in inception report and must be presented to RSU for approval. The firm will be required to provide:

#### **DELIVERABLES**

*(a) Report on the development and review of tools, (TBQ, school profile, questionnaire for teachers, HMs, Students and parent,) criteria for inclusion i.e. Development, policy and planning and establishing relations with the learning of the students.*

#### **4. PILOT TESTING AND CREATING ITEM PROFILES AND ESTABLISHING SCALE RELIABILITY**

The piloting of test item is one of the strong tools to enhance the reliability of the test material. This strategy has been widely used among the developed education systems. As government of Sindh is striving to introduce the modern techniques of testing for overall quality of teaching and learning process so it is essential to apply this technique to achieve the broader objectives of this reform. Piloting and item analysis is to create item profiles is one of the most essential strategies used by the examiners to enhance the quality of test materials. The contracted firm is required to pilot 4 times the items required to develop the paper according to the specification that is fit for purpose and avoid content, cultural, language and gender bias.

The firm is required to pilot test item and undertake item analysis to identify item quality, difficulty level as well ability of the item to discriminate between less able students on an achievement scale of 1-5. Hence, this will require piloting testing of 4 times the items required to develop the actual test The contracted firm will assure the suitability of the sample size and its representativeness for pilot testing to develop item profiles, estimate reliability, develop achievement levels and to avoid bias. The firm will also develop test administration instructions, instructions booklets and train test administrators. . The firm will do item analysis including item difficulty and discrimination, review item based on item quality criteria to ensure that the quality test material may be used in the real tests. The contracted firm will also ensure that content, construct, face and criterion validity are met in the desired test. The contracted will also establish paper reliability and firm will also review the instructions for examiners and examinees. The firm will apply measures of anchoring and other techniques to equate multiple forms.

##### **4.1 Pilot testing will also provide information regarding:**

- a) *length of time required for the tests to be completed:*
- b) *Possible answers for the open-ended test items;*
- c) *Criteria to be used for marking open-ended test items.*
- d) *Items that are culturally biased.*
- e) *Items profiles, difficulty and discrimination index.*
- f) *Appropriateness of test administration manuals*

***Pilot testing of the test items and tests will need to be conducted with up to 2000 fresh students. 1200 students of Grade 6 and 800 students of Grade9 will appear in Pilot test.***

**4.2 The pilot test students should be representative of the testing population:**

- ***Geographical area (Urban, rural areas)***
- *Nature of school: Male, female, mixed school students*
- *Medium of schools, Sindh, Urdu and English*
- *Types of schools in terms of one teacher, two teacher less than 10 teachers/ more than ten teachers etc*
- *School with basic facilities.*

Appropriate software should be used to analyze the data and to provide feedback reports. The report of piloting will also be shared by the client with RSU.

**Note:** The sample population for pilot test should be from grade Vi and grade IX and studying in the population of targeted grades. Moreover, the test may be administered to the students who had completed their grade V and grade VIII and recently promoted to grade VI and IX.

**DELIVERABLES**

*(a) Pilot testing report indicating the process, sampling and sample, methodology, item profiles and feedback on item improvement, reliability, item sorting according to specification and achievement scale. Key issues, challenges, lesson learnt, recommendations and way forward*

**5. DEVELOPMENT OF ASSESSMENT FRAMEWORK**

The firm will developed Assessment Framework for the SAT-VI test , develop marking scheme and steps to ensure quality in marking and scoring.

**5.1 The Marking scheme/rubric for CRQs/ERQs should describe the following:**

- Criteria to be used for marking open-ended test items.
- Development of new item and review criteria of test items which is already developed.
- Result of item analysis based on classical item analysis.
- Selection procedure for CRQ item
- Item profiles, difficulty and discrimination index.
- Process for scoring and coding of assessment booklet
- Process of item analysis and selection of items for actual test
- Appropriateness of test administration manuals/guideline, monitoring form, developed guideline for taluka or district coordinator, test administrators field report
- The Challenges/issues and recommendations.

**5.2 Ensuring the Quality of Marking and Scoring the Tests**

The subjectivity in marking of answer scripts has been widely observed in public examination systems. This challenge is greatly hindering actual student performances and the quality of teaching and learning is continuously decreasing due to the subjectivity of marking. Firm will use e-marking and train markers on the criterion developed and to adopt standard procedures to reduce the variance in marking and increase inter marker reliability for CRQs, and ERQs and procedural problem solving in mathematics

#### **DELIVERABLES**

*(a) The firm will develop, share details and adopt standardized procedures for increased marking reliability and accuracy so that overall quality of marking can be increased.*

*(b) Training manual, date and venue of the activity, list of trainees and trainers and Profile of marker and coders used in the process, (like name, designation, qualification, experience etc)*

#### **6. FORMAT OF THE TEST PAPERS**

The format of the test will be agreed with the contracted firm. The format of tests affects Tests' reliability and validity. It is internationally recognized that the test format has **an** influence **on the** test performance of students. It is important that the formats of all the tests match. There is **a** need **to ensure that** the tests are easy for the students to read and to make them to want to complete the tests. The test administration should include a sample test, this will provide exercise in solving the tests.

Two set of test booklets (Booklet A, B), consisting of 100 test items each in the subject of Science, Mathematics and Language (Sindhi/Urdu/English) of the same level of difficulty will be developed for students. This will prevent copying during the testing. The format of the test papers will also be dependent on whether the contracted firm uses optical mark readers and optical character readers.

The final booklets consist item with respect to difficulty level as;

Easy items= 20 %      Moderate item= 60 %      and Difficult items= 20 %

These test booklets will be presented to RSU one week prior to its printing and approved accordingly

#### **DELIVERABLE**

*(a) A complete template with Paper layout and format along with a report on reason for using the particular layout*

#### **7. STUDENT POPULATION TO BE TESTED**

The population to be tested will be all students of Grades V and grade VIII enrolled in public schools of Sindh province after verification of enrollment (Firm will verify enrollment for final test).

## DELIVERABLE

*(a) Details about the Population/Enrollment, medium, shift of schools and type of school district and Taluka wise.*

### 8. PRINTING AND DISPATCHING OF THE TESTS

The printing and dispatching of the test booklets to the test centers will be the responsibility of the contracted firm. The booklet should be on appropriate gram paper and should be readable.

## DELIVERABLE

*(a) Booklets to the entire population appearing in the tests.*

*(b) Five sets of the test booklets IN EACH SUBJECT AND VERSION to RSU.*

*(c) Booklet printing schedule district wise / taluka wise before 1 week of actual test.*

### 9. TESTING DATES AND TIMING

The testing firm will establish examination centers within area of 2 KMs. SAT examination centers may be established in Higher secondary school, Secondary schools, Middle schools, Elementary school, primary schools, campus schools, The tests are expected to be conducted in the **1st week of January 2018 before the Schools annual exams**. The tests will be administered according to a rotation timetable drawn up by the contract firm. It is expected that two divisions will be covered in one week and the testing will be completed in 29 districts (or as per new administrative structure) **in one month**.

The time required for the tests will be approximately 30 minutes for each test (subject). All the subject will be tested in a school in one day.

The test of two booklets administered in a day with minimum gap of 30 minutes. The whole process of test administration will be completed during school time 3 to 4 hours.

## DELIVERABLE

*(a) A complete testing plan with timelines and dates, division, district, taluka wise and schools addresses to be provided at least 10 days prior to test administration to RSU and Educational Managers of School Education & Literacy Department.*

### 10. TEST ADMINISTRATION AND MONITORING.

The test administration is one of biggest challenge in large scale testing in Pakistan. It has been observed that all the stake holders, i.e. candidates, teachers and even parents try to affect the results. Thus the test administration requires adequate planning, training of test administrators and monitoring by the testing agency.

The third party will engage monitors/firm involved in monitoring to observe at least 5% test centers to collect information about the quality of test administration. The third party will submit a

report developed by monitors/ monitoring firm highlighting strengths and weaknesses along with recommendations so that the quality of test administration may be enhanced for upcoming SAT rounds.

#### **DELIVERABLES**

- (a) Report on the standardized procedures adopted for the test administration of SAT in the province. Details of Workshop for test administrators, dates and venues, Fields reports of the test administrators (TAs) and profiles of TAs and recommendations.*
- (b) Report of monitoring and evaluation by the test administration along with frame work ,Detail profile of the Monitoring and Evaluation firm*

#### **11. STATISTICAL ANALYTICAL REPORT ON STUDENT PERFORMANCES AND SOCIO ECONOMIC TOOLS**

The third party/ firm will use latest software to explore the evidence of equating using statistics, analysis of not only raw scores but ability of students on a national norm, percentile, internal consistency and parallel forms reliability will be presented.

The contracted firm will also present achievement in relation with the independent variables in the background questionnaire to identify the correlations, also to identify good schools and districts, schools and districts needing additional support. The kind of support will also be suggested by the firm based on the data for evidence based planning.

##### **A Technical Analytical Report may present.**

*Section 1: Standardized Testing Purpose, Process and Methodology.*

*Section 2: Descriptive Results Reporting.*

*Section 3: Analytical Results Reporting in relation to the key areas in the background questionnaire*

*Conclusion, Recommendations, Implications for policy, planning, practice.*

The results should indicate achievement through percentiles and achievement scales for each subject to the results should be analyzed for the following:

- Achievement of individual students for each subject, cognitive level achievement scale, Mean achievement, standard deviations, percentiles, grade/subject specific achievement scale for each subject for provinces, districts, talukas, UCs/wards and schools
- Achievement( Mean achievement, standard deviations, percentiles, grade/subject specific achievement scale) comparing district results (result of one district as compared with the rest of the districts), talukas (result of each taluka as compared with other talukas in the same district), tehsils (result of each lasi! as compared **with** other tehsils in the same district); UCs (result of each UC as compared with the rest of the UCs **in a** tehsil)
- Achievement (Mean achievement, standard deviations, percentiles, grade/subject specific achievement scale) according to rural, urban areas.
- Achievement (Mean achievement, standard deviations, percentiles, grade/subject specific achievement scale) according to gender — male, female
- Range of scores within province, district, taluka, tehsil
- Regional trends within the province



- Achievement (Mean achievement, standard deviations, percentiles, grade/subject specific achievement scale) of private schools according to fees charged. the analysis tools used should be able to provide data to enable year upon year trends to be
- Achievement of students related to information provided by the background Questionnaires by teachers and parents obtained as well as comparisons between subject achievements.

**DELIVERABLES**

*(a) An international standard printed Technical Analytical Report including Teacher, student and parents and head teachers Background questionnaire information and different correlations.*

**12. STRATEGY FOR DISSEMINATION OF STUDENT PERFORMANCES WITH STAKEHOLDERS**

The sharing of student performances with parents and other stakeholders is one of the major innovations introduced through SAT reform. The purpose of disseminating student performances is to make public realize the issues and challenges of public school system and the parents may start inquiring about their child’s performances through student record card (SRC).

The firm will devise strategies for dissemination of student performances for the multiple stakeholders. (POLICY MAKERS, students, Parent, school heads and District Managers,)

For this purpose the firm will develop strategy to:-

- a) Inform divisional and district Managers about the test administration plan and
- b) Disseminate the finding of the SAT among stake holders. Generate and share appropriate data for different stakeholders including policy makers and implementers, district staff, head teachers, teachers, curriculum planners, textbook writers, and most important the parent and child. Moreover the usability of the information and its relevance to the participants will be very important so that the implications of the findings on the basis of SAT results can be designed and implemented.
- c) Develop and implements strategy for,“ dissemination of the students report cards among parents.

**DELIVERABLES**

- (a) Report on conduct of Regional Seminars.*
- (b) Plan and report on the dissemination of SAT results.*
- (c) Report On Dissemination of SRC.*

### 13. PROCESS AND EX-POST REVIEW

The process and ex-post review of the achievement test is one of the major distinctions of SAT reform. The firm will develop a monitoring and evaluation framework for process to feedback into the process for improvement and ex-post review to diagnose the strengths and weaknesses of the whole process from diagnose the process of test development, test administration, analysis of data, and dissemination of result with stakeholders along specific suggestions which may help to improve the quality of each step. The firm will review the SAT website user trends to identify the number and nature of SAT website users. The firm will also suggest some material/links which may be uploaded on SAT website so that information available on website can be used by various stakeholders.

The firm will review the whole process and make suggestions which may help to refine the process for coming rounds of SAT.

#### DELIVERABLES

##### For Quality Assurance:

*(a) Report on the Process, methodology, tools, time lines methodology and Outcomes and Monitoring and Evaluation Framework with indicators for the entire contracted work, each component and comprehensive basis.*

##### C- TIME PERIOD

The whole project will be complete in 38 weeks. Detailed time lines for each deliverables are given as under:-

S.No	Deliverable	Time
1	<b>Deliverable 1: Inception Report, Validated Test Paper Specifications</b>	<b>2 weeks after award of the contract.</b>
2	<b>Deliverable -2 : Development and review of test items</b> <b>Deliverable-4 : Development and review of socio economic status of parents, teachers background questionnaires (TBQs) questionnaire for teacher's students and parents and school profile</b>	<b>4 weeks after the inception report</b>
3	<b>Deliverable-3 : Pilot Testing and creating Items Profiles And Establish Scale Reliability</b>	<b>6 weeks after he deliverable 2 and 4</b>
4	<b>Deliverable- 5: Development of assessment frame work</b> <b>deliverable-6 format of the test paper</b>	<b>6 weeks after deliverable -3</b>
5	<b>Deliverable -7 :Student Population To Be Tested</b>	<b>12 weeks after</b>

		<b>deliverable 2 and 4.</b>
<b>6</b>	<b>Deliverable-8: Printing And Dispatching Of The Tests</b>	<b>2 weeks after deliverable -7</b>
<b>7</b>	<b>Deliverable-9: Testing Date And Time</b>	<b>2 weeks after deliverable -7</b>
<b>8</b>	<b>Deliverable -10: Test Administration And Monitoring (One Month Exercise)</b>	<b>One week after the Deliverable -8)</b>
<b>9</b>	<b>Deliverable-11: Statistical Analytical Report On Student Performances And Socio Economic Tools</b>	<b>8 weeks after deliverable 10</b>
<b>10</b>	<b>Deliverable 12: Dissemination Of Students Performance With Stakeholders( 4 Weeks Exercise)</b>	<b>10 week s after deliverable 11</b>
<b>11</b>	<b>Deliverable-13: Process And Ex-Post Review( 4 Weeks Exercise)</b>	<b>4 weeks after deliverable 11</b>

#### D- PAYMENT PROCEDURE:

Payment for SAT-VI (2017-18) shall be made in accordance with the break up given below.

- a) 10% of the cost of lump sum contract shall be released on preparation of Project Inception Report, Project Implementation Plan, collection of enrollment verification data and other requisite plans / protocols and test paper specifications.
- b) 10% of the cost of lump sum contract shall be released on submitting development and review report of test items (Science, Mathematics and Language) and tools for socio economics survey for Parents, tools for teacher, students and HMs, TBQ and school profiles and establishment of web site.
- c) 10% of the cost of the lump sum contract shall be released on submission of pilot testing report (technical and statistical). Development of assessment frame work and format of the paper.
- d) 10% of the cost of lump sum contract shall be released on sample papers dissemination through newspapers **by the consulting firm on its own expenses** and sending sample papers to all schools and finalizing student population to be tested.
- e) 20% of the cost of the lump sum contract shall be released on test administration in 75% schools by sending authenticated attendance report.
- f) 20% of the cost of the lump sum contract shall be released on submission of final colorful report (technical and statistical)
- g) 20% of the cost of the lump sum contract shall be released on disseminating/sharing results among all relevant stake holders , including sharing of the student report cards to parents through test center schools

Note: All the submitted reports shall be treated as draft until the satisfactory comments received from concerned portfolio manager. This assignment is carried out for estimated 300,000 students (Three Hundred Thousand). The consultancy firm shall furnish proposal keeping in view this no. of students. In case of excess of 300,000 students appeared/attended test, the payment to the consultancy firm shall be made on prorata basis. A student here means one who appear/attend test. No payment shall be made on reimbursement basis.

**Comment [FU1]:**

**Comment [FU2]:** This is added here : **by the consulting firm on its own expenses**