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Evidence for learning: supporting the development of the Government of India's National Achievement Survey

1 ABSTRACT

The purpose of this paper is to present an example of how large-scale assessment survey evidence can inform planning; how well-focused medium-term technical assistance can provide sustainable longterm benefit to an education system; and how such support can serve the interests of equity and inclusion.

This paper is written from the perspective of an international consultancy organisation managing technical assistance to a government agency under an aid project. The paper describes how appropriate support over a six year period is transforming the Government of India's National Achievement Survey (NAS) into a high quality study, using modern psychometric testing techniques aligned to best international practice. This inquiry is based on our practical experience and draws on evidence from the project management history and the NAS documentation, illustrating the technical issues and the change process through this period.

The significance of this experience to the theme of learning for sustainable futures and the subtheme of what types of evidence are needed to inform learning is that it demonstrates how a national survey assessment of student learning can be a tool for improving planning and allocation of effort and resources at national, state and local levels, providing evidence for policy makers and education managers, based on actual learning levels in the school system. It links to other sub-themes. As a future pointer for international support and cooperation, it shows how relatively small technical inputs can impact throughout a very large public education system and thus benefit millions of children.

2 INTRODUCTION: INDIA'S ELEMENTARY AND SECONDARY EDUCATION PROGRAMMES

The Government of India has a programme to enhance secondary education access and quality, Rashtriya Madhyamik Shiksha Abhiyan (RMSA). RMSA was initiated following the establishment of India's universalisation of elementary education programme, Sarva Shiksha Abhiyan (SSA[1]).

The Centrally Sponsored Schemes of SSA & RMSA programme governance, management and funding are by the government of India, through its national Ministry of Human Resource Development (MHRD) and through the governments of each of the country's constituent states and union territories. While SSA received limited financial support from development partners; the World Bank, the UK Department for International Development (DFID) and the European Union (EU), RMSA receives limited support from DFID and the World Bank.

2.1 DFID's technical assistance to SSA and RMSA

DFID has provided to SSA and subsequently to RMSA short-term technical assistance, focused on specific aspects of education system capacity development agreed between MHRD and the development partners. Under SSA, DFID's technical assistance was focused on building capacity in two areas: evaluation of education quality enhancement initiatives in the elementary education subsector; and the design, conduct and reporting of the national achievement survey of learning in schools (NAS).

Under RMSA, the focus of technical cooperation has been broadened to provide assistance grouped under six main thematic areas: National Achievement Survey, Teacher Management and Development, School Quality, Data Management and Use, Results Focused Planning. Communications and Knowledge Management as well as research are a part of support strategy for all of thematic support. Overall, the purpose of the technical assistance is to maximise the impact of key aspects of the Government of India's SSA and RMSA efforts.

DFID's technical assistance to SSA was delivered through a competitively tendered service contract which ran from July 2008 to September 2012, and to RMSA has been provided through a separately tendered service contract from 2013 to the forthcoming end date of March 2016. Cambridge Education was selected through a global tendering process by DFID and the Government of India as the lead contractor under the SSA and the RMSA technical assistance tenders[2].

3 THE NATIONAL ACHIEVEMENT SURVEY

The National Achievement Survey was instituted as a measure of 'health check' of the school education system for the purpose of providing evidence for evaluating the effectiveness of the school education system, so that areas requiring attention could be identified, and progress in levels of learning in the student population could be documented and observed over time. The picture gained would be used to inform planning and allocation of resources. Specifically, NAS was introduced by the Government of India (MHRD) to evaluate progress and achievement of the education system under SSA. This remit has subsequently been extended to secondary education level, under the RMSA programme.

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[1] The SSA website is http://ssa.nic.in/ and the RMSA website is http://www.rmsaindia.org/en/
[2] As SSA-TSA, Cambridge Education's main technical partners on NAS were Anglia Assessment and ETS, while as RMSA-TCA, Cambridge Education's main technical consultant on NAS has been ACER, with inputs also by NFER.

3.1 The origins and establishment of NAS

The core purpose of SSA is to improve inclusion and equity in education. SSA is India's flagship programmatic response to the global Education for All drive. While substantial funding was committed to SSA, and activities were undertaken by state governments and nationally, substantive, overall evidence of the impact of the programme on student's learning was not readily available. MHRD therefore decided to undertake a baseline survey of achievement levels. This would be followed by a mid-term assessment and finally a terminal assessment, based on the periodic NAS cycle.

The Centrally Sponsored programmes such as SSA & RMSA are high profile programmes of the Government of India to support elementary and secondary education in the country. Aside from educational professionals and funders, there is keen interest on the part of the general public and expectation of accountability and reporting of its progress and achievements. Thus the motivation and expectations for instituting NAS are that it will provide information which will not only benefit education planners, policy makers, state and local level managers, teacher trainers, curriculum developers and teachers, but also that it will provide assurance to parents, politicians and funders that the efforts invested in school education are proving effective and worthwhile outcomes.

Based on the conception of the surveys as baseline, midterm and post-intervention, or terminal, assessments over the lifespan of SSA, as an assessment of the impact of the programme, the tests were initially referred to as baseline, midterm and terminal achievement surveys (BAS, MAS and TAS, respectively). The current terminology of NAS, supersedes these labels, and arose from recognition that such periodic 'health checks' of the education system could be of relevance beyond the lifespan or scope of the SSA programme.

Accordingly, a pattern of a rolling cycle of surveys has evolved, with the successive rounds being referred to as Cycle 1, Cycle 2, Cycle 3, etc. At the same time, in the period since the initial survey assessment was carried out to test the learning of children at Class III, V & VIII levels, NAS has been extended now to test students at Class X in secondary education under RMSA. Class V marks the completion of primary level, Class VIII the completion of upper primary (and with it, elementary education), and Class X the completion of secondary level schooling.

Class III, V and VIII NAS reported on Cycle 3 in various reports over the period of 2012-2014. Meanwhile, the first Class X NAS began development in 2013, has undertaken the main survey field implementation in 2015 and is currently preparing in transition to the analysis, reporting and dissemination phase of its cycle in 2015-16. A representation of the cyclic structure of NAS and its earlier proposed schedule is shown in Figure 1, below[3].

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cycle 1 (formerly Baseline Achievement Survey)				Cycle 2 (formerly Mid-Term Achievement Survey)				Cycle 3 National Achievement Survey (formerly Terminal Achievement Survey)			
Class V		Class III		Class V		Class III		Class V		Class III	
	Class VII & VIII					Class VII & VIII			Class VIII		

Figure 1: Proposed schedule of NAS cycles

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[3] Source: Jayshree Oza and George Bethell, *Assessing Learning Outcomes: Policies, Progress and Challenges.* Sarva Shiksha Abhiyan, DFID-funded research study. DFID, 2013.

3.2 NCERT's role and structure, and its responsibility for NAS

The appropriate institutional base for carrying out the surveys identified by MHRD was the National Council of Educational Research and Training (NCERT). NCERT is an 'apex institution' in the Indian education system, reporting to the MHRD. NCERT is most popularly known as being the developer of national curricula and of school textbooks. It is also involved in research, materials development and dissemination, and inservice and pre-service teacher training. NCERT conducts an All India School Education Survey (AISES)[4] and a National Talent Search to identify and award scholarships to promising students[5]. NCERT has a number of departments to support all aspects of school education at its central campus, the National Institute of Education (NIE) and pre-service education degree courses at its constituent Regional Institutes of Education (RIEs).

NAS was first developed and implemented by NCERT, centred on and led by a faculty team in the Department of Educational Measurement and Evaluation (DEME), from 2001. Members of that team have remained at the heart of NAS development, implementation and reporting, throughout the history of NAS to date, augmented by other faculty with structural reorganisation of NCERT and the formation of the Educational Survey Division (ESD). ESD, created through the merger of DEME with the Department of Educational Surveys, currently has the responsibility for conducting NAS.

3.3 NAS is value for money

NAS represents a strategically excellent value investment for the MHRD and the states of India as a tool to assist in planning the education system on a rigorous evidence basis. A major benefit of NAS being carried out as a survey assessment, and using the advanced IRT techniques it has adopted, is that the survey creates a rich profile of educational achievement data across the country at relatively low cost.

The effort required to develop and implement NAS is intensive, and it requires significant allocation of time and high level technical expertise to deliver its promise. However, the school system and its national budget are vast, and the effort and expenditure on NAS is very small in that context.

Additionally, as NAS is applied at selected grades, periodically (currently, Classes III, V, VIII and X, planned on a cycle of once every three years for each of those grades), and with a sampled number of schools and students which is very small compared to the population, the information generated by NAS presents a description of the education system as a whole, with vastly greater efficiency than a census-based test could achieve.

4   TECHNICAL SUPPORT TO NAS: SUPPORTING THE CHANGE PROCESS

As mentioned above, when DFID and MHRD in 2008 initially commissioned a Technical Services Agency through a Technical Cooperation Fund provided by DFID, the TSA was to focus on building capacity to enable NCERT to operate more effectively in two areas: the NAS and evaluation of quality initiatives. While the focus of the technical support has broadened and changed overall under the RMSA funding which supports the Technical Cooperation, developing and strengthening NAS has remained a core element.

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[4] See http://www.aises.nic.in/home
[5] See http://www.ncert.nic.in/programmes/talent_exam/index_talent.html

NAS was already underway prior to the commencement of the technical support: Since 2001, Classes III, V & VIII BAS and MAS had been carried out. The TSA was tasked to assist NCERT to strengthen NAS and to introduce international best practices, techniques and standards[6] in conducting large scale national assessment survey.

A key element of the transformation which NAS embarked on was the adoption of an approach to designing, developing, conducting and reporting the surveys using psychometric techniques based on Item Response Theory. This had major technical implications for test design and development, survey administration and reporting student performance. Transition to an IRT-based approach for NAS was specifically identified by NCERT, the MHRD and development partners as a desired direction of travel in the Terms of Reference for the TSA. This transition is outlined in Box 1, below.

Item Response Theory (IRT) and its adoption for NAS

In the first two cycles of NAS conducted under SSA (ie, BAS and MAS), achievement data were analysed using Classical Test Theory (CTT) and outcomes were reported simply as the proportion or percentage of correct answers. Using this method, the results are linked to particular tests and groups of test-takers so it is very difficult to use multiple tests or to link results from one year to another. In response to specific request, TSA/TCA has supported NCERT to implement the use of Item Response Theory (IRT) for NAS, in line with current international best practice of assessment surveys[7].

IRT uses mathematical models that assume a statistical connection between the difficulty level of the test item, the ability of the student, and the probability of that student being successful on a particular item. Whilst this method makes the analysis more complex than traditional methods, it has many advantages:

- IRT places students and test items on the same numerical scale. This enables us to produce meaningful 'maps' of items and students
- In IRT, the difficulty parameter for an item does not depend on the group of test takers. With the use of shared 'anchor items', multiple test booklets can be 'linked' or equated.
- IRT anchoring can also be used to compare scores from tests used in different years. This is essential for monitoring progress over time.

The most visible consequence of using IRT is in the form of the reporting scale used to convey information about learning outcomes. Results are reported not using 'raw test scores' or 'percentage correct scores' but are reported as 'scale scores'. This gives important advantages. Most importantly, the scale can be fixed so that results from future surveys can be reported on the same reference scale. Thus, provided adequate linking procedures through common items are incorporated, a score of, say, 270 in 2012 will be equivalent to a score of 270 in 2016, even though the items used may not be the same. So if, for example, a state's average score in Mathematics rises from 248 to 254 over a three-year period, we can compare these directly and draw meaningful conclusions about changes in student achievement. This is possible because - even though the scores have been derived from different students taking different tests at different times - the reporting scale is fixed.

Abridged from Jayshree Oza and George Bethell (2013), pp 33-34

Box 1: Item Response Theory and its adoption for NAS

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[6] See the contextualised review of the development of NAS by Jayshree Oza and George Bethell, *Assessing Learning Outcomes: Policies, Progress and Challenges.* Sarva Shiksha Abhiyan, DFID-funded research study. DFID, 2013
[7] The adoption of IRT by NCERT, and the use of CTT and IRT for NAS, are described in more detail in the report *National Achievement Survey Class V*, NCERT 2012, pp 17-22.

The technical assistance (TA) provided to support the institutional and technical capacity development to carry out NAS under SSA exemplifies the use of medium term TA to leverage long term, sustainable benefits to the education system. Technical aspects and stages of a NAS cycle in which the TA has supported and assisted NCERT to undertake innovations are summarised in Figure 2, below[8].
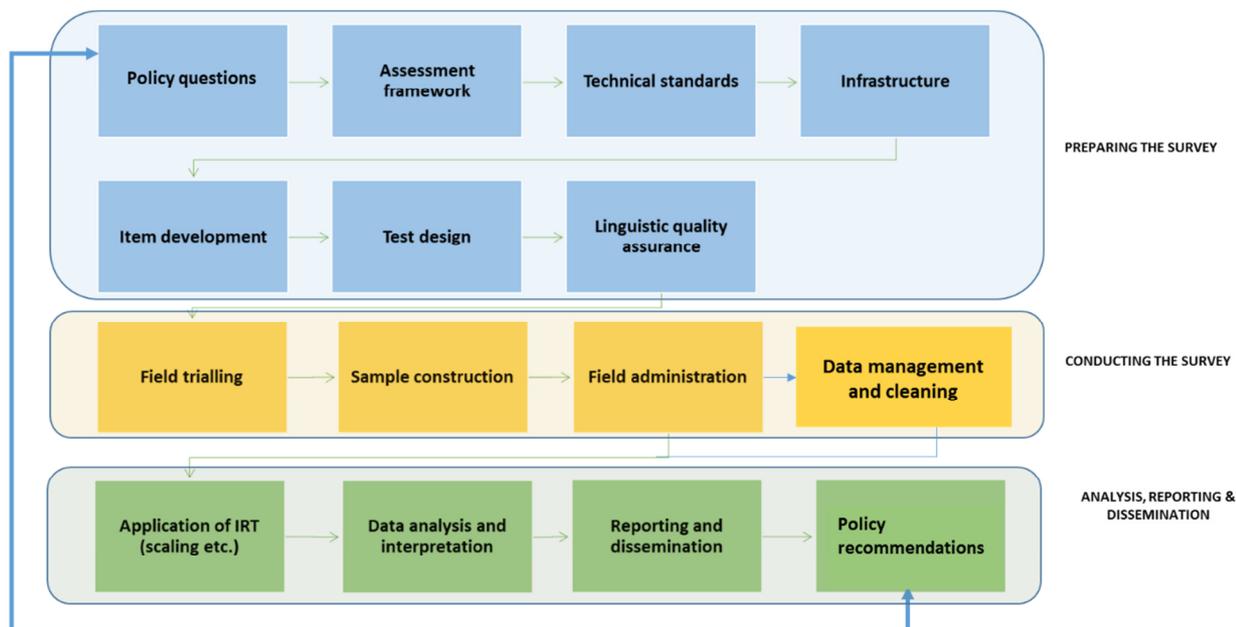

Figure 2: Stages and aspects of NAS development, implementation and reporting

4.1 Training and handholding

International and national experts have conducted training in conventional modes, combining a programme of in country workshops and a smaller number of short training courses held overseas. In both cases, the training agenda, materials and follow up support were agreed between the TSA/TCA and NCERT and tailored to the skill development needs and priorities for the NAS and the personnel involved through an ongoing communication and support.

As well as these short, focused training events, TCA has adopted an approach of 'hand-holding' the NAS team at NCERT and the states through the processes of learning, based on the practical, on-the-job tasks of developing, making, trying out, revising and utilising NAS tools and systems for the various parts of the NAS cycle. This has included a range of sophisticated data analysis procedures involved at different stages of the survey process.

4.2 International exposure and alignment

In addition to focusing on NAS as a model and activity, the assistance has also brought exposure to institutions and bodies of knowledge and practice through engagement of NCERT with a range of international bodies and their perspectives, including the Australian Council for Educational Research (ACER), Education Testing Services (ETS)[9], the National Foundation for Educational Research (NFER), Anglia Assessment, and University of London Institute of Education. NCERT

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[8] The identification of stages is based on a model developed by the Australian Council of Educational Research (ACER) and utilised with NCERT as a guiding reference in TCA's support to NAS.
[9] With some consultancy inputs under IEA, the International Association for the Evaluation of Achievement

faculty have also been supported to participate in international assessment conferences, including the American Educational Research Association (AERA) annual conference in San Diego in 2009 and the International Association for Educational Assessment (IAEA) annual conferences in Bangkok in 2010 and in Manila in 2011.

One strand of this international exposure has been consideration of international surveys and how far their practices are transferable to NAS. This has included visits to key agencies, consideration of examples and quality standards from PISA, TIMSS and other large international surveys, registration into regional assessment networks and subscriptions to professional journals.

4.3   Technical advice and direct interventions

Technical advice has been provided in a range of ways, including providing reports and exemplar procedural handbooks which walk through survey processes, step by step, and advising on the documentation and procedures NCERT might adopt. In selected tasks, the technical assistance teams have in the first instance directly undertaken technical tasks on request from NCERT, and in continual dialogue with NCERT, to complete a necessary step swiftly in an overall process which NCERT is undertaking. Such direct intervention is the exception rather than the rule, but has been agreed as appropriate in some instances where the technicalities and the timeframe involved made this the best course of action.

Undertaking a NAS, and in particular undergoing a transition to an IRT-based model, demands a high level of technical expertise by many people in very specific areas. This expertise takes time to develop. The technicalities of test development and design, scale scoring, analysis and reporting of the newly shaped NAS are unfamiliar and have to be learned, practised, reflected on and refined in the light of experience, progressively becoming embedded in individual and organisational practice. Key elements of technical support and of the corresponding learning and evolution of practices embedded in conduct of the NAS are summarised in Table 1, below, against each of the stages or aspects of the achievement survey cycle previously identified in Figure 2.

Table 1: Learning and embedding of new practices in aspects and stages of NAS

Learning and embedding of new practices in aspects and stages of NAS			
Preparing the survey			
#	**Stage or aspect of survey**	**Technical assistance focus**	**Embedding practices and learning as a result**
1	Policy questions and policy recommendations	Inclusion of articulation with policy issues and communication of findings to impact policy as core elements in the assessment framework.	Raised expectations of NAS reports, as the reports have evolved. This in turn driving further engagement of NAS into policy discussions, in a continual cycle.
2	Assessment framework	Development of a comprehensive assessment framework which states explicitly what the assessment intends to measure and its underlying principles.	Detailed specifications of the content, organisation and structure of the assessment; areas of policy relevance to be addressed; and the background information to be considered.
3	Technical standards	Agreement of technical and quality benchmarks for component aspects of the survey, as a key organisational guide in developing and implementing NAS.	Development and subsequent working to technical standards for each of the key areas of a robust assessment framework, to the principles of consistency, precision and generalisability of data.
4	Infrastructure	Training and use of new software for statistical analysis of data, data sharing and secure storage, application of IRT methods and report generation.	Achievement surveys enabled to function effectively and efficiently, with appropriate staffing, software, hardware and organisational systems.
5	Item development	Development of test items, to cover the appropriate range of curriculum knowledge and competencies.	Increased quality of test items with each iteration of NAS, and expertise in designing and developing items which genuinely test the range of cognitive processes and knowledge.

6	Test design	IRT-based test design using linked test booklets to cover wider range of concepts and difficulty levels efficiently.	Designing of tests which will provide objective and robust information on students' understanding, intellectual skills and knowledge.
7	Linguistic quality assurance	Enhanced linguistic QA procedures in developing, translating and checking test items, tests and test results.	Ensuring the precise equivalence of items and tests translated into different languages and the reliable comparability of data from a single NAS test conducted in different languages.
8	Field trialling items	Field try-out of test items; statistical analysis of their functioning and difficulty against the ability levels of students.	Selecting effective test items at identified levels of difficulty and functionality, for use in test design and construction according to IRT-based model.
9	Sample design	School samples and within-school samples for each state using software and statistical principles appropriate to IRT based survey design.	Selecting representative sample of schools and students to take the tests, so NAS provides an accurate image of attainment across the country and within subsidiary groups.

Conducting the survey			
#	**Stage or aspect of survey**	**Technical assistance focus**	**Embedding practices and learning as a result**
10	Field implementation	Standardised field operations manual; detailed specifications on test administration procedures to ensure data capture and statistical validity.	Enhanced collection of test data and background information through questionnaires, emphasising standardised sampling and test administration procedures, advance training and process recording.
11	Data management & cleaning	Manual and computerised techniques and procedures reliably to manage and prepare data for statistical analysis, interpretation and reporting.	Reliable collection, transmission, collation, entering, checking, storage and statistical cleaning of survey test and questionnaire data, to provide a sound basis for analysis, interpretation and reporting.

Analysis, reporting and dissemination			
#	**Stage or aspect of survey**	**Technical assistance focus**	**Embedding practices and learning as a result**
12	Application of IRT	IRT scaling methodology. Statistically plotting test responses by student ability against item difficulty. Weighting data across the sample.	Alignment of data for statistical analysis and the generation of reliable and statistically significant results.
13	Data analysis and interpretation	Statistical query techniques to generate tables and graphs to show significant findings about students' learning, based on IRT techniques.	Extracting significant findings from the survey data collected, to understand what students know and what they can do.
14	Reporting & dissemination	Developing effective communications documents in different formats, useful for policy-makers, planners, managers, educators and parents.	Sharing survey findings effectively with interested parties, in a menu of formats, and making rigorously produced survey data available for secondary research and for future comparisons.

4.4 Communication and advocacy

A limitation on the effectiveness of the NAS has been its reporting in an easy to understand form and advocacy of the findings of the survey to the potential users of the information generated based on the survey findings. The technical support has helped in development of more accessible reporting formats, for a range of users, including use of info-graphics and briefer state summary reports, information notes and national reports. This is a work in progress, as is current work on making the NAS report data available on the MHRD website in user-friendly formats. The direction of travel is towards all NAS data being available online for users, including researchers.

5 ASSESSMENT GEARED TOWARDS EQUITY AND INCLUSION: HOW NAS DIFFERS FROM SCHOOL EXAMS

Assessment is an everyday feature of the education system in India as elsewhere, and examinations at all levels are familiar to educationists and students alike. However, the kind of assessment which NAS represents differs significantly from school examinations in various ways.

This means its purposes and methods are notably distinct and demand specialised understanding and application.

School examinations are by definition a screening mechanism to decide those who meet determined reference criteria (eg, a grade or score for progression, entry selection or rejection in an institution) and those who do not. The achievement survey of NAS is designed to find out the true level of student learning with respect to a progressive scale of competencies regardless of expectations of student learning at a particular grade.

This difference in intention and focus of NAS to assess levels of learning also makes it a tool in the service of equity and inclusion. When the technical features of the NAS tests are fully embodied, NAS offers the following benefits when compared against school examinations.

5.1 Providing information on learners at all ability levels, not just identifying the top level achievers

NAS provides information on actual learning levels, not norms for selection. The tests designed for NAS seek to include and provide discrimination for all abilities in the class. The tendency of school exam papers is to focus on the highest achievers, and not to provide detailed information on the long tail of mid-range and lower achievers[10]. NAS provides a picture of the actual level of learning for all students. The levels are not adjusted to fit entrance or pass ratio requirements, as is the case in school examinations.

5.2 Comparable across years and across the country

The achievement descriptions in NAS remain constant, year on year, and across populations in different states, using different languages, with different cohorts. In this way, comparisons can be made to track where learning is taking place and among which groups. Additionally, correlations can be drawn between achievement and social, economic and other contextual factors – although causality cannot be attributed.

5.3 Tests are low stakes, not high stakes

By being a survey rather than a census test, with a sample of students in a sample of schools taking the test. The specific results of the survey tests are not provided to the survey schools, teachers or students. This implies that the schools, teachers or students will not face any direct consequences, and tests carry no fear of sanction or benefit directly for the teachers or the schools that makes the tests low stakes. Once the stake-holders understand this it removes stress and provides more accurate status of student learning.

5.4 Providing information about the school system and its population, not about individual schools or learners

As mentioned above, being a survey, NAS does not provide a picture and feedback on an individual student. It cannot be used to track the progress of an individual. What NAS can do, is to provide information of a high order about the school system. For example, it can indicate

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[10] Such characteristic of typical summative examinations differs from school-based assessment for learning or formative assessment, as is intended in the system of Continuous and Comprehensive Evaluation (CCE) introduced in India by the Central Board of Secondary Education. CCE is explicitly intended to support the progressive development of each student. See http://www.cbse.nic.in/cce/cce-manual/chapter_1.pdf .

variations between states in learning achievement – in terms of average achievement and the range of learning between lowest and highest levels (as shown by a distribution curve of student scores on a scale). NAS can also show how well boys are performing compared to girls, rural students compared to urban students, and how those of different social groups are performing compared to one another.

Within each subject covered by NAS, the conceptual understanding and skills, as well as the subject content knowledge of the students is revealed, so that for example mathematics scores can be broken down to see which parts of the mathematics curriculum are providing problems and which are being well handled.

NAS provides detailed information which can be used to correlate learning with contextual factors such as economic status a student's family, family size, the presence of books at home, school management (government, government-aided or private). Such attention to background variables, with data being collected by state level bodies and interpreted by NCERT, has been a feature of NAS from the outset, predating the arrival of external technical support.

On a different dimension, NAS provides the opportunity to compare objectively the levels of learning in all these respects in a given Class in one year with the levels of learning in the same Class the previous time the same Class of NAS was carried out: this is a periodic 'snapshot' of the workings of the education system at that level.

With enhancements which may be introduced, NAS also can be enabled to provide cohort analysis, so that the achievement levels of the cohort in Class III in one NAS can be compared with the achievement levels of the same cohort when they read Class V, two years later.

In all of the above, the identity of the individual student and school are obscured: the survey is about the country, the state and the social groups within these, not about the individual

6 MANAGEMENT CHALLENGES TO MEET EXPECTATIONS

There is a widely held expectation among the Government of India, the public and development partners that a NAS cycle of any Class should be completed within a single year. However, as with other large and complex surveys (including PISA), a longer period is required for the cycle from design through development and implementation, to reporting. Whilst very substantial progress has been made in coordinating and reducing the timeframes of NAS, and there is clear scope for progress towards achieving shorter and more regular cycles than has been the case to date, managing unrealistic expectations in this respect is a challenge.

6.1 Staff resources

The small number, skillsets and availability of staff in NCERT to learn and to carry out the composite array of tasks which go into the NAS have presented in combination a constraint throughout the history of NAS to date. While individual staff members' capacity has grown very greatly through their work on NAS, it has so far not proved possible to establish a substantial growth in the number of suitably skilled personnel to work on the survey. One strategy to address this has been to outsource particular tasks, such as manual data entry and scanning of optical mark recognition (OMR) test papers. Developing outsourcing and strengthening the expert team

working on NAS are current areas of exploration and prospective elements in the direction of travel, as discussed under next steps, below.

On recommendation of the 14th SSA JRM, a NAS Review and Strategic Planning Committee was established and tasked by MHRD to develop a strategic plan for achievement surveys in the country and produced a proposed structure for a unit dedicated to conducting NAS[11]. This was taken forward and elaborated by NCERT in the form reproduced as Figure 3, below.
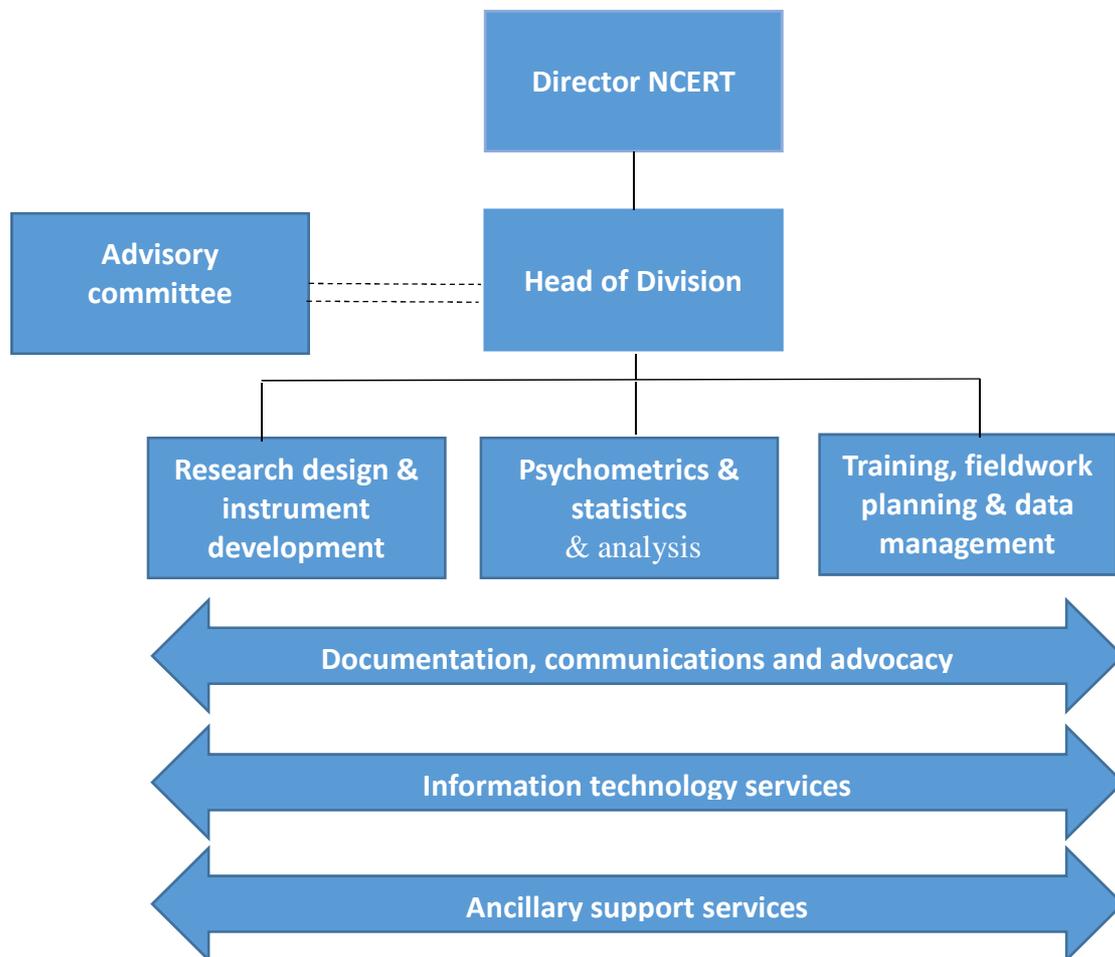

Figure 3: Proposed structure of unit aligned to conduct NAS

6.2   Test field administration and data management

NAS is implemented in the field by state level bodies on behalf of NCERT. The extent to which the technically required procedures are followed has varied. This can lead to some of the data which are collected being unreliable and excluded from the overall analysis and reporting. This is an area which is being addressed by means of process design, handbooks, and more thorough briefing and training of field operators.

The rigorous nature of the NAS test design and statistical analysis reveals where an issue has arisen in field implementation. Thus field administration of the test is addressed both prospectively in systems design and orientation, and also retrospectively, in instances where data

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[11] NAS Review and Strategic Planning Committee Report (Chaired by Prof Nargis Panchapakesan), NCERT, July 2012

analysis or other documentary evidence indicates an issue. Unreliable data are weeded out from the main test analysis and reporting, and adjustments are made where partial data are available, as appropriate in each case. This is an essential part of any survey.

However, efforts to strengthen field administration are seen to pay dividends in terms of reducing later data cleaning workload and in the extent and quality of data received from the test administration. Even if a test is well designed and prepared, the value of the data it generates depends very crucially on the procedures for field administration and data management being followed and recorded accurately. As well as ensuring the field operations manuals specify clearly and accurately, it is essential that training of field operatives is thorough and effective. Unlike development of the tests and procedures, the field operation is a distributed process, in the hands of very many individuals, who are not part of or managed by the institution.

6.3 Advocacy

The NAS surveys are developing to be increasingly strong and informative, based on technically sound processes. The impact of this is in use of the findings generated from each of these surveys. Further advocacy of the findings of the NAS and their use in policy and practice is needed to reap the benefits. This involves both informing organisational users and also building an understanding among the wider public as to what NAS is, and how it can be of interest and use. To this end, a brief animation has been developed and reports in more accessible formats have been developed.

7 NEXT STEPS

In continuing to attend day to day on the tasks specific to the continuing cycle of NAS implementation, NCERT is pursuing iterative enhancement of NAS quality and maximising the value of the surveys through successive cycles. In doing this, it is strengthening the sustainability of NAS through streamlining processes and organisational development. This process is anticipated to continue, with continued strong demand from MHRD for NCERT to deliver survey findings about the health and progress of the elementary and secondary education systems to inform policy.

From work already in train and foreseen over the coming months, next steps in developing and embedding the progressive strengthening of NAS are expected to include the following.

7.1 Expansion and development of ESD experts

The workload and technical demands of conducting the full range of NAS tasks on a sustainable basis are larger and more diverse than the staff strength of the Educational Survey Division (ESD) can realistically be expected to manage, on current staffing levels and with the current load of responsibilities.

It is thus vital that ESD expands and renews its core team, as has been long recognised, particularly in the context of depletion of numbers through the retirement and departure of staff without replacement. Equally, to maximise the functioning for NAS of the staff capacity which does exist, it is highly desirable that the allocation of workloads allows staff to concentrate on their respective specialist task areas of focus. Along with such steps, continuing the technical development of staff through targeted and continuing expert support and training in specific areas will be an essential complement. This is a key strategy for longer term sustainability, given the increased load and complexity of the work required to run NAS effectively.

7.2 Exploration of outsourcing routine tasks

To date, outsourcing NAS component tasks by NCERT to third parties has been limited to service support tasks such as data entry and scanning of Optical Mark Recognition (OMR) test response sheets, and engaging states in the field operations of the surveys. Additionally, some high-end technical data analysis tasks have been handed on a one-off basis to the TA resource to carry out.

To complement the development of the NAS expert pool within NCERT and other institutions, NCERT may engage in mapping where it may be functionally desirable and appropriate to incorporate service provision by third party bodies and to manage those outsourced services on a routine basis.

7.3 Development of films, printed and online documents to explain NAS

NAS produces substantial technical reports. These are the flagship products of each survey and are vital outputs. NCERT has at the same time moved to producing a range of smaller, less technically detailed documents to communicate NAS findings to different users. This will continue to develop.

Additionally, the increased use of non-print media is predicted. This would include both short advocacy films and animations to explain what NAS is, why it is important and how it can be of use and interest, and also training films to enable standardised, quality assured training to be provided across the country and on multiple occasions to personnel directly involved in NAS on tasks such as item design, translation quality assurance, field implementation of the survey, data management, and preparation and maintenance of sample frame data.

The use of websites as the key public repository of NAS reports, data and other information will be developed, as discussed above, including an interactive portal for individually generated queries.

7.4 Extending and embedding practices

Developments which are underway need to be sustained over a prolonged period of time to become refined and embedded in practice and plans, while NCERT continues to manage the preparation, implementation and reporting of the NAS cycles. This embedding will be supported by handbooks and how-to guides on key aspects and stages of NAS.

8 CONCLUSIONS

8.1 Assessment survey data can shed light on a system for education planners and managers

NAS is leading towards making available hard evidence of learner achievement for education planners in India, for the first time. This will provide a real diagnostic evidence resource for use at macro level and provide a basis for secondary research.

8.2 Assessment can serve equity and inclusion

Within each of the tests, it also provides a nuanced, objective picture of learning, by students of all ability levels within the class cohort. The design of the NAS, with its increasing sophistication of sampling, test design and analytic techniques, enables comparisons to be made of learning achievement between states, social categories, gender, and across all ability levels. Thus a picture

can be drawn of what students know and what they can do, and where support needs to be focused to improve their learning.

8.3 Clearly focused technical assistance can leverage large scale change

A relatively small input of resources, in a well-focused and managed effort of technical assistance, promises to bring major and lasting benefits to a large scale education system. By focusing on this single key area of development of capacity and practice, the multiplier effect in terms of the breadth, depth and granularity of information available to education policy makers and planners can provide a lever which informs decisions on allocation of effort at the highest and most far reaching levels.

8.4 Development needs continuing support

Change takes time, and continuation of support and commitment over a period of years. Project-based support is relatively short term, and needs to be sustained for changes to be developed and institutionalised, to succeed in having long-term impact.

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Ministry of Human Resource Development (MHRD) homepage: http://mhrd.gov.in/

National Council of Educational Research and Training (NCERT) home page: http://www.ncert.nic.in/

Sarva Shiksha Abhiyan (SSA) homepage: http://ssa.nic.in/

Rashtriya Madhyamik Shiksha Abhiyan (RMSA) homepage: http://www.rmsaindia.org/en/

Several of the NAS reports are available variously at the following locations (as accessed 20th August 2015):

http://ssa.nic.in/page_portletlinks?foldername=NAS (Class III Cycle 3, 2014, Class VIII Cycle 3 reports)

http://www.ncert.nic.in/programmes/NAS/NAS.html (Class III, V and VIII Cycle 3 reports)

http://www.ssatcfund.org/LinkClick.aspx?fileticket=g6cmLV3Gr04%3D&tabid=2508 (Oza and Bethell 2013 (draft format version)