Integrating the findings from the National Assessment of Student Achievement into the policy process: An experience from Nepal

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FROM THE EDITORS

For the UNESCO Regional Bureau for Education in the Asia-Pacific (UNESCO Bangkok), the acknowledgement of the right to quality education for all – enshrined in Sustainable Development Goal (SDG) 4 – across the region is crucial. After all, only when all children and young people have access to quality education, and the lifelong opportunities it offers, can we achieve SDG 4. This is a goal of the wider education 2030 agenda, which is one building block of the 2030 development agenda, guided by the maxim: 'Leave no one behind!'

While the improvement in access to education in the past decades has been an enormous step forward, it is not sufficient for ensuring quality education. If learning does not occur, we cannot speak of *substantive access*. Or, in other words, we could say that we do not have quality education.

It is for this reason that we applaud Nepal's efforts in not only setting up a unit for educational assessment and implementing periodic national assessments, but also in making sure that the data from these assessments informs national policies to ensure quality education for all.

This publication is the second in the series of topical case studies initiated jointly by the Network on Education Quality Monitoring in the Asia-Pacific at UNESCO Bangkok and the Australian Council for Educational Research, Centre for Global Education Monitoring (ACER-GEM). It provides a detailed overview of how Nepal conceptualises its learning assessments – in terms of grades, subjects, test development and contextual questionnaires – and discusses in depth how assessment findings are integrated into the educational policy and planning cycle in Nepal.

While Nepal must have faced many challenges in setting up this system, we know that this would have been an excellent experience of evidence-informed policymaking and planning. Nepal's commitment to these practices is laudable, and we are very glad to provide a forum for the region and the world to see it.

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INTRODUCTION

Attaining nearly universal school enrolment of primary-school-aged children, Nepal's priority is to ensure that all children complete their education having achieved desirable levels of learning outcomes. National assessments to measure achievement have been used to gain an understanding of whether students are achieving desirable learning outcomes. In 2010 the Ministry of Education (MOE) instituted the Education Review Office (ERO) – an assessment agency – with a mandate of carrying out the National Assessment of Student Achievement (NASA) periodically to inform policy processes about the status of the quality of learning and equity in education.

The ERO has, so far, accomplished four large-scale national assessments, in 2011 and 2013 at Grade 8, and in 2012 and 2015 at Grades 3 and 5. These covered two rounds in each of Grades 3, 5 and 8. Mathematics and Nepali were assessed each time, and Science was also assessed at Grade 8. In addition, English at Grade 5 in 2012, and Social Studies at Grade 8 in 2011 were assessed. After completing each of these assessments, the ERO published reports outlining the main results. Before making the report public, the ERO disseminated and shared the results with policymaking officials at the MOE, including department heads. Reports were also disseminated to development partners (DPs), educational journalists and the media to inform public opinion on the areas to improve.

This paper presents the experiences from Nepal on how the findings from the National Assessment of Student Achievement have been integrated into policy processes. The purpose of this brief paper is twofold: to give an overview of the process of the National Assessment of Student Achievement, and to describe how the results were disseminated to different stakeholders to incorporate the findings into the design of policy processes. In doing so, the case study highlights how the assessment findings have been used to design and implement policies and programs in education.

AN OVERVIEW OF THE NATIONAL ASSESSMENT OF STUDENT ACHIEVEMENT IN NEPAL

Initiated in 1995, large-scale assessments of student achievement in Nepal have been established as an integral part of education development and reform initiatives.

Evolving the practice of the NASA

In Nepal, assessments of student achievement were conducted from 1995 to 2010. There was no agency set up to oversee the assessment, and there was no fixed schedule. The assessments themselves were supplied by external consulting firms. They were based on classical test theory, with relatively small samples. Therefore, the comparison of results across different years was difficult, compounded by the use of multiple booklets to represent different content areas. Due to the absence of a dedicated assessment agency during this phase, there were hardly any systematic reforms or improvements to assessment processes and methods. Similarly, dissemination of results was very limited and, therefore, they had limited input into policies and programs.

After the establishment of the ERO in 2010, a national assessment system was institutionalised. The NASA has the specific aim of providing feedback to the education system for quality improvement (ERO 2013a, 2015a, 2015b, 2016a). The objectives of the NASA are as follows:

▸ Identify the students' achievement levels in respective grades and subjects. Analyse the differences in students' achievement among various geographical regions, districts, development regions, language groups and gender.
▸ Identify factors influencing students' learning.

The NASA cycles

Since 2010, the ERO has accomplished two rounds of the NASA in each of Grades 3, 5 and 8. Table 1 shows the assessment cycles (by years, grades and subjects) from 2011 to 2015.

Early grade reading assessment (EGRA) has now been introduced in Grade 3, therefore, for the next cycle of the NASA, Grade 3 will not be included. However, the NASA will be introduced in Grade 10 for the next cycle. Table 2 shows the planning for the next cycle (2017–23).

Table 1: NASA plan from 2011 to 2015

	2011	2012	2013	2014	2015
Grade 8	Maths, Nepali and Social Studies		Maths, Nepali and Science		
Grade 5		Maths, Nepali and English			Maths, Nepali and English
Grade 3		Maths and Nepali			Maths and Nepali

Table 2: NASA plan from 2017 to 2023

	2017	2018	2019	2020	2021	2022	2023
Grade 10			Maths, Nepali, Science and English				Maths, Nepali, Science and English
Grade 8	Maths, Nepali and Science				Maths, Nepali, Science and English		
Grade 5		Maths and Nepali				Maths and Nepali	

Assessment methods and process

All NASA cycles conducted by the ERO from 2011 to 2015 were based on representative samples of schools and students. Item response theory (IRT) was used to calibrate the items and equate the scores.

Sampling

Samples for the assessments were selected in three stages. At the first stage, 23 to 28 districts were selected out of 75 districts in Nepal, using a stratified random selection method for each round of assessment. All 75 districts were stratified into three ecological zones: Mountain, Hill, Tarai, and five Development Regions; Eastern, Mid, Western, Mid-western and Far-western, with a separate stratum for the Kathmandu Valley, making 16 strata altogether. Schools were then stratified into public and private, as well as urban and rural locations. At the third stage, at least 14 000 students were selected in each subject, covering all selected schools, using a random sampling method.

An example of the sampling is shown in Figure 1, which shows the locations of sample districts for the NASA in 2013 at Grade 8.

Assessment instruments

In each of the assessments, two types of instruments were used to collect data: tests in each assessed subject and grade, and background questionnaires for each assessed student, and the respective subject teachers and head teachers. The background questionnaires were developed to identify the effects of various factors associated with student achievement.

Figure 1: NASA 2013, sample districts for Grade 8
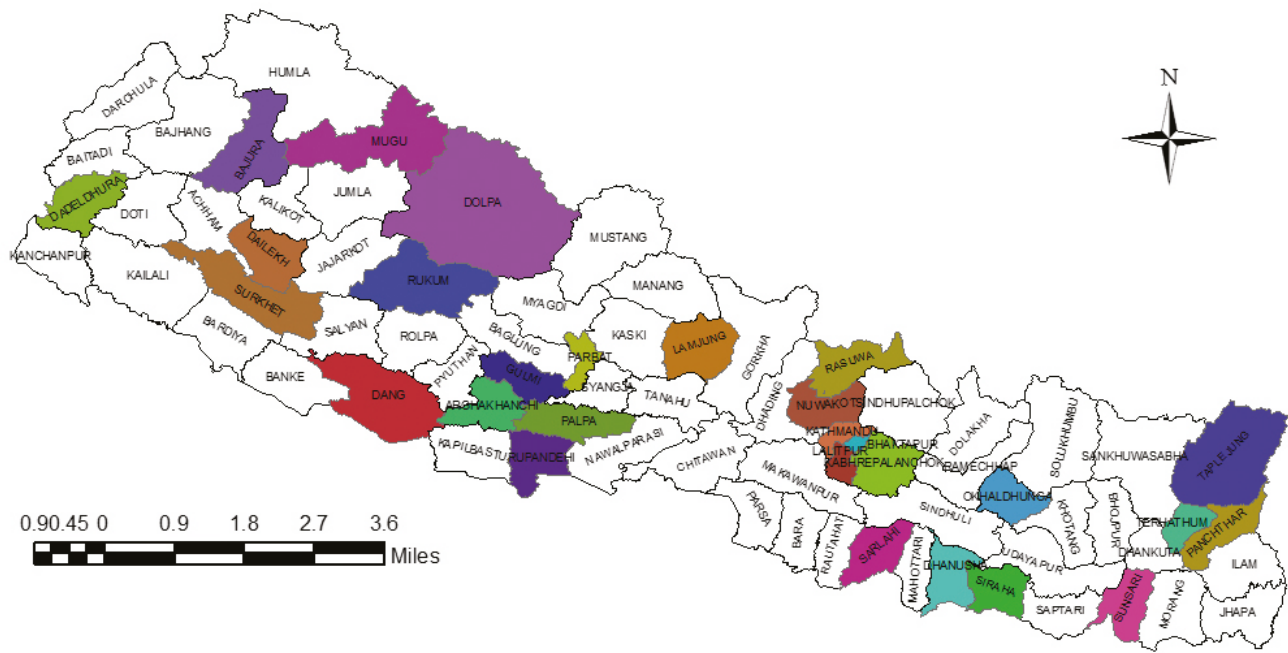
Test development

The first step in test development was analysis of the curriculum of each grade and subject. Before writing the tests, the ERO organised training on item writing for teachers in the relevant subjects. A team of item writers was selected from these participants, along with subject experts and university teachers. The team drafted a sufficient number of items based on curricular objectives and competencies. Selected items were trialled and analysed based on the data collected during the pre-test, then items with appropriate levels of difficulty and discrimination power were selected for inclusion in the final test.

In order to compare the NASA results with international assessments such as TIMSS and PIRLS, some items were calibrated using IRT modelling from the sets of released items from PIRLS (for Grades 3 and 5 in a Nepali-translated version, and for Grade 5 in English) and TIMSS (for Grade 8 in Mathematics and Science) (ERO 2013a, 2015a, 2015b, 2016a). Some items from previous assessments were also included. The rotational test design was used as a set of linking items in tests 1 and 2, and another set of linking items was used for tests 2 and 3. Finally, three sets of items were prepared, including some linking items so that they could be compared. Each assessment included multiple-choice and created-response items. The major principles adopted in selecting the test questions were as follows (ERO, 2016a, 2015a):

▶ To ensure content validity, items were based on the curriculum and tried to cover curricular contents as much as possible.

▶ Using an adopted version of Bloom's taxonomy, selected items were classified into four categories of cognitive domain: knowledge, comprehension, application and higher ability.

▶ Reliability of test was ensured by selecting items with proper difficulty level and discrimination power.

▶ To compare results, items were calibrated and adopted from relevant international assessments as well as previous assessments.

Background questionnaires

Background questionnaires for students, teachers and head teachers were prepared to identify factors associated with student achievement. These included peer group factors, student factors, home factors, demographic factors, teacher factors, economic factors, physical factors and leadership factors (see Figure 2) (ERO 2013a, 2015a, 2015b, 2016a). Questions on students' attitudes towards subjects were prepared using an adopted version of the Fennema-Sherman attitude scale (Fennema and Sherman 1976; Kadijevich 2006), and included in the questionnaires. Similarly, questions relating to socio-economic indicators, including parents' education and occupations, family home possession, infrastructure, and the type of school attended, were also included in the questionnaires. The questionnaires were developed by a team of experts, who took into account the framework adopted in Metsämuuronen (2009) and background questionnaires used in PISA and TIMSS, along with suggestions from the workshops of teachers, school supervisors, parents and researchers in the field of education.

Figure 2: Conceptual framework for the background information

Peer-group factors
- Social environment
- Bullying
- Interest groups
- Atmosphere in the classroom

Demographic factors
- Language groups
- Geographical position
- City/rural area
- Population density

Economic factors
- Financing of the school
- Cooperation with business
- Financial support from families

Student factors
- Individual differences
- Previous achievement level
- Support for special needs
- Gender
- Interests

Learning
- Learning
- Learning outcomes
- Changes in learning outcomes

Physical factors
- Physical environment
- Safety
- Cooperation with local figures and organisations
- Size of the school

Home factors
- Socio-economic background
- Support for studies

Teacher factors
- Classroom activities
- Background education and teaching skills
- Cooperation with other teachers
- Use of teaching materials

Leadership factors
- Leadership cultures and skills of the principal
- Atmosphere/ethos of the school
- Grouping in the school

Source: ERO (2013a); adapted and contextualised from Metsämuuronen (2009)

REPORTING AND DISSEMINATION OF RESULTS

Analysis and reporting

The analytical framework developed for the NASA focuses on three categories in each subject: basic results, results based on diversity-related factors and selected explanatory factors for assessment results.

Analysis of the basic assessment results was carried out on overall distribution of scores, achievement in various content areas, achievement in various cognitive domains, item types and achievement, and comparison of achievements with previous results and international standards such as TIMSS or PIRLS, as appropriate.

Similarly, assessment results were analysed according to various diversity-related factors, including district, ecological zone, development region, school type, school location, home language, ethnicity/caste and gender. The factors included in the analysis were socio-economic status, including education and occupation of parents, home accessories and possessions, type of school attended, employment outside school hours, attitude towards subjects, student age, support received for study, availability of textbooks, homework and feedback, and positive (motivational teachers' behaviour and school environment) and negative (bullying) activities in the school.

In each assessment, the ERO prepared two types of reports: a technical report and a summary report[1]. The technical reports describe the methods and process used, analysis of results, major findings and implications. The summary reports are public reports written in the Nepali language for

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1   See ERO (2013a, 2015a, 2015b, 2016c) for the summary reports (public reports), and ERO (2013b, 2015d, 2015e, 2016b, 2016e) for the technical reports.

wider dissemination, presenting a summary of methods and processes as well as major results, findings and implications without adding detailed technical descriptions (Poudel, 2017).
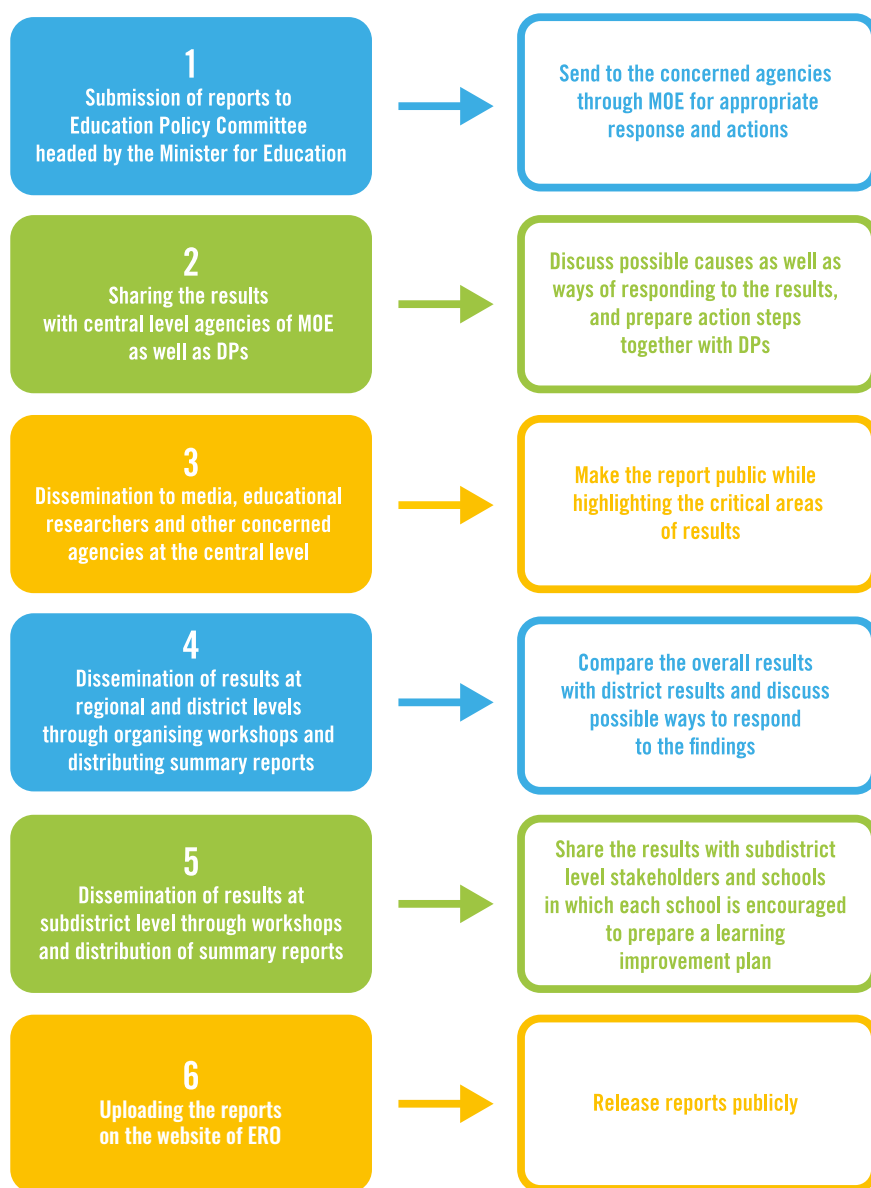
Dissemination of results

The ERO disseminated the NASA results to policymakers, including senior officials, and submitted it to the Education Policy Committee headed by the Minister for Education. At the same time, the results were made public through various media channels, including print, electronic, television, radio, the ERO website[2] and printed reports.

The results were disseminated and shared at the regional level via regional education directorates (REDs), at the district level via district education offices (DEOs) and at the subdistrict level via resource centres (RCs)[3]. At the resource centre level, head teachers from each school within the resource centre area participated. In the NASA dissemination workshop, the results were briefly presented, and participants discussed and presented possible action points.

The flow chart in Figure 3 summarises the process of reporting and dissemination of assessment results.

Figure 3: Process of reporting and disseminating assessment results

1 Submission of reports to Education Policy Committee headed by the Minister for Education	→	Send to the concerned agencies through MOE for appropriate response and actions
2 Sharing the results with central level agencies of MOE as well as DPs	→	Discuss possible causes as well as ways of responding to the results, and prepare action steps together with DPs
3 Dissemination to media, educational researchers and other concerned agencies at the central level	→	Make the report public while highlighting the critical areas of results
4 Dissemination of results at regional and district levels through organising workshops and distributing summary reports	→	Compare the overall results with district results and discuss possible ways to respond to the findings
5 Dissemination of results at subdistrict level through workshops and distribution of summary reports	→	Share the results with subdistrict level stakeholders and schools in which each school is encouraged to prepare a learning improvement plan
6 Uploading the reports on the website of ERO	→	Release reports publicly

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2   www.ero.gov.np

3   In Nepal, there are five REDs, 75 DEOs and 1053 RCs working to manage education services to schools and community. Each RC is a cluster of 10 to 30 schools (in most cases) working to support schools and teachers to improve their teaching and learning practices.

INTEGRATING THE FINDINGS INTO THE POLICY PROCESS

To integrate the findings from the NASA into policy, a multi-step process was implemented.

Overall guidance from the Education Policy Committee

The ERO formally submitted the assessment results to the Education Policy Committee (EPC) headed by the MOE, which is supposed to utilise the results in policy formulation and reform. Similarly, the EPC is responsible for instructing agencies such as the Department of Education, the National Centre for Education and Development, the Curriculum Development Centre, and the Controller of Examination for program development and implementation that responds to the assessment findings.

Organisation of meetings and discussions by MOE and ERO

The MOE and ERO organised a meeting for senior policymakers working under the MOE to identify possible actions based on the NASA findings. An outcome of the meeting was that a team comprising representatives from each central level agency (CLAs)[4] of the MOE was formed to identify the main reform areas and possible interventions that could be made to improve the situation. The team also worked with DPs to prepare the main action points for improving learning achievements. It further discussed and elaborated on the draft action plan in order to improve achievement levels through policy and program provisions.

Although the Department of Education had the overall responsibility of monitoring the implementation of the action plan, other concerned agencies, such as the Curriculum Development Centre, the Teacher Development Agency and the Examination Board, were also responsible for the reforms related to their scope of work.

The NASA findings and potential programs to respond to the findings and the action plan were discussed by the MOE during the government's annual budget preparation. The action plan is described in detail in the next section.

ACTION PLAN BASED ON THE NASA FINDINGS

The development of the action plan based on the assessment results began in 2013, when the report of the first assessment conducted by ERO was released. The action plan included strategic priorities based on assessment results, actions/ activities, timeline (short-term, medium-term and long-term), responsible agencies and budget implications. As mentioned earlier, the MOE developed the action plan with the participation of all central level agencies including the ERO and DPs. Now that it has been developed, the action plan can be updated and revised according to new assessment results.

The action plan based on the NASA 2011 findings, for example, identified the following six strategic priorities.

- ◢ Improve schools' overall learning environment.
- ◢ Promote activity-based learning and early grade reading.
- ◢ Reform student assessment system.
- ◢ Strengthen teacher preparation and professional development.
- ◢ Strengthen professional support and supervision in the classroom.
- ◢ Institutionalise the NASA system.

In order to implement the strategic priorities and to identify key activities for each priority, a timeline, responsibility and budget implications were indicated for each activity. Table 3 is an example of an action plan for one of the strategy sets based on the NASA 2011 (ERO, 2013a) findings:

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4   Central level agencies of the Ministry of Education are the agencies working at the national level with specialised functions, such as the Department of Education for overall management school education, the Curriculum Development Centre for curriculum and textbook designing, the National Centre for Education and Development for designing and conducting teacher training, and the National Non-Formal Education Centre for managing adult literacy and continuous education.

Table 3: Action plan for one of the strategy sets based on the NASA 2011

NASA findings	Strategy	Action/activity	Timeline	Responsibility	Budget implication
Students are adept in tasks related to memorisation and recall, but are not effective in skills requiring application or ability at a higher cognitive level.	Promote activity-based learning and early grade reading.	Implement flexible routines in all schools, with separate and dedicated classes/ sessions for project work and extra-curricular activities.	Short-term and continuous	DOE/CDC/DEOs	No additional budget required.
Students' achievement is poor in reading skills.		Implement the National Early Grade Reading Program across all community schools in a phased manner.	Short-term and continuous from fiscal year 2014/15	DOE/DEOs/ Schools	Budget for this activity is already proposed in AWPB/ASIP of fiscal year 2014/15; budget from USAID could also be included.

SOME INITIATIVES TOWARDS RESPONDING TO THE NASA FINDINGS AND THE ACTION PLAN

The following four initiatives are examples of the responses to the NASA findings and action plan based on the results of NASA 2011, 2012 and 2013.

Introduction of the National Early Grade Reading Program

As the assessment results repeatedly showed poor reading proficiency, resulting in low achievement, the MOE designed and introduced the National Early Grade Reading Program for the early years of primary school (Grades 1, 2 and 3), aimed at promoting reading. Part of the program includes assessing reading skills regularly by means of standardised tools, and helping teachers to develop and implement strategies that facilitate improvements in students' reading skills, as well as developing various reading materials. In order to monitor and assess progress, a baseline Early Grade Reading Assessment (EGRA) was carried out in 2015, with a midline EGRA planned for 2018 and the end line EGRA planned for 2021. The impacts of an EGRA program on student achievement will be evaluated with the proposed EGRA of 2021.

Case studies in low- and high-performing schools

As revealed by assessment results, a wide achievement gap (for example, school scores ranged from around 10 to 90 percentage points in the NASA 2012 at Grade 5 in Mathematics) was found between low- and high-performing schools. With a view to devising support mechanisms for low-performing schools, the ERO conducted in-depth case studies to identify the reasons behind high and low performance of schools located in the same district. The findings of these case studies showed that the head teacher's leadership, teamwork of teachers at school, accountability systems for students' learning, instructional planning, feedback systems, teachers' and students' regular presence in the school/classroom and time spent on classroom activities were the key factors that contributed to student achievement. These case studies were also shared with both high and low performing schools, which provided an opportunity for low performing schools to learn from the best practices of high performing schools.

Use of assessment results in curriculum review

As the NASA results show, curriculum was focusing on recall of factual knowledge that promotes rote learning, but there is a recognition of the need for curriculum review and revision. The Curriculum Development Centre (CDC) considered assessment findings as a reference while reviewing the primary level curriculum, with a view to making the curriculum more supportive, promoting activity-based teaching and learning, and fostering higher cognitive skills. Moreover, in order to make students' learning more practical and useful to their lives, the CDC prepared an integrated curriculum for the early grades (Grades 1 to 3, particularly) to replace the existing subject-specific curriculum in the early grades of education. Although the integrated curriculum design has not been finalised yet, there is some discussion on interdisciplinary integration of curriculum. Interdisciplinary integration blends and links different disciplines. For example, instead of developing a separate curriculum for environmental science, social study and language, these areas could be integrated around some themes or problems.

Use of assessment results in teachers' professional development

The National Centre for Educational Development (NCED) took into account the results of the NASA while designing methods, processes and content for teachers' professional development. For instance, in 2016, NCED defined the competencies of teachers, and developed a new teacher professional development model to address these competencies. In the previous model of teachers' professional development, certain pedagogical and content knowledge and skills were delivered without specifying and categorising the competencies of teachers. The new model has been designed around the defined teachers' competencies, which will be delivered in a combination of face-to-face mode and supervised classroom practice.

SUMMARY AND CONCLUSIONS

Large-scale assessment results have played a significant role in informing policy dialogue and program design in Nepal. Since the completion of the first assessment, which was conducted in Grade 8, the assessment program has been regarded as strategic to the development of education policy and programs. Four national assessments, twice for each of Grades 3, 5 and 8, conducted by ERO identified several issues, for which policies and strategies could be devised. Regarding the outcomes of the national assessment process, MOE's evaluation report notes, 'NASA process has resulted in

i) teachers, head teachers and DEO being more committed to learning outcomes; ii) influencing factors being identified; iii) development of outcomes being traced; iv) and finally, capacity building about assessment instruments and methods being strengthened' (Poyck, Koirala, Aryal, & Sharma, 2016, p. 83).

This paper highlights how the Nepali education system used the assessment results to inform policy processes and program design in education. However, there were some challenges in disseminating the results and using the results to design and revise the policy and program. In Nepal, the systematic and regular practice of the national assessment system is a recent phenomenon, whereas the public examination system has been practised for a long time. Most of the education stakeholders tend to focus on public examination rather than national assessment. In this regard, the challenge is to demonstrate to stakeholders the importance of national assessment for improving policy and planning in education. Another challenge for the ERO has been to disseminate the NASA findings to a wider audience, as the limited resources, both human and financial, of the ERO may not be sufficient to disseminate results at the desired level. At the same time, reflecting on the feedback of the NASA findings while designing policies and programs may not be straightforward. It requires continuous effort, and the MOE has yet to develop a system and mechanism to support this. Such a mechanism would also be instrumental in addressing the issues of proper implementation and monitoring of an action plan in response to the NASA findings.

There is increased recognition that assessment data is useful for establishing links between policy research and action for implementing reform agenda. Two trends have been noted in this context. First, policy researchers have been taking assessment results as one of the key sources of information; second, assessment results and the finding of some of the other policy research converge. Since the ERO increased the consultation and sharing of process and results of assessment at a decision-making level, the level of convergence with policy action has begun to increase. Therefore, the policy–action link can be strengthened further if decision-makers are well informed about the assessment process in advance, and the results of assessment are received before policy is designed. National assessment will continue to support the design of reform agenda if there is continuous dialogue between the assessment agency and policymakers during the design phase of assessment and when making policy decisions.

In addition to aforementioned usage of assessment results in different policy and practice reforms, the following are three implications of the NASA in Nepal.

Considering assessment results during the designing of the annual educational plan

There is a growing interest in considering national assessment results when setting targets, identifying focus areas and designing programs for improving students' learning. The results of the national assessment have been considered one of the bases for designing the annual education plan.

Implementing initiatives to improve assessment practice

Learning from the NASA practices on test design and development, the School Sector Development Plan (SSDP, 2016–22) has been preparing to conduct public level examinations at Grades 8, 10 and 12 using standardised tests. Capacity-building activities in test writing, developing standardised tools in school-level assessments, and test analysis have been designed to improve assessment practices in schools.

Scaling up large-scale assessment to other grades

Recognising the significance of national results of large-scale assessment to inform evidence-based policy processes, the SSDP urges for the scaling up of national assessment to Grade 10, as well as the continuation of the current assessments in Grades 3, 5 and 8. The SSDP also intends to institutionalise achievement testing annually at the resource centre level through strengthening the institutional capacity of resource centres. The assessment data has also been used by agencies working in school education, including government and non-government, for benchmarking while initiating educational programs in their areas. They have devised support programs and resource allocation schemes based on the assessment results. Thus, the assessment program is regarded as strategic for the development of new programs and the targeting of resources.

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