

NEQMAP WORKSHOP

Overview of Student Learning Assessment

Student Learning Assessments

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4-6 NOVEMBER, 2015 / KATHMANDU, NEPAL

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The primary purpose

The primary purpose is:

- Building capacity for large scale national assessments

And driving that is a desire to improve Nepal's primary and lower and higher secondary education systems.

And we will focus on:

- Reasons for national assessments
- Writing assessment frameworks and items
- Analysis systems

A benchmark intervention

What if, in addition, you:

- Worked with teachers before the start of the teaching block
- Clarified the learning topics (and objectives), developed an assessment framework, designed outcome measures (assessment items and tests)
- The Ministry sent benchmark tests, with instructions and interpretation guides, to schools 2-3 weeks before the end of the teaching block
- Teachers administered the tests, scored them, and used them as part of the reporting process
- Then you repeat the exercise, building on what you have learned

Defining Assessment

"Assessment is the systematic collection, interpretation and use of information to give a deeper appreciation of what students know and understand, their skills and personal capabilities, and what their learning experiences enable them to do."

(Northern Ireland Curriculum Guidance for Assessment in the Primary School)

How is assessment defined in the official documents of Nepal?

Do people use this definition?

How would students and teachers define assessment?

Dann (2012)

”Fundamental ... is the idea that learning, ultimately, is constructed and controlled by pupils. Without teachers willingness to engage with the curriculum and pupils developing range of cognitive competencies and experiences, learning will not proceed. If assessment genuinely seeks to give some indication of pupils levels of learning and development, in ways which will further advance learning, pupils will need to understand and contribute to the process.”

(p. 2)

How do Nepal's students contribute to the assessment process?

Using Assessment Information

"Many people want to use assessment information, and they want to use it in many ways." (Stiggins (2007),p.29)

Who uses assessment information in Nepal?

What information do they use?

When and how do they use it?

Is the information used appropriately and in a timely manner?

Can you offer a constructive critique of the use of assessment information in Nepal?

Formative and Summative Assessment Definition

Summative Assessments are given periodically to determine at a particular point in time what students know and do not know.

Formative Assessment is part of the instructional process. When incorporated into classroom practice, it provides the information needed to adjust teaching and learning while they are happening.

Assessment for learning

- enables teachers to use information about students' knowledge, skills and understanding to inform their teaching
- teachers provide feedback to students about their learning and how to improve

Assessment as learning

- involves students in the learning process where they monitor their own progress, ask questions and practice skills
- students use self-assessment and teacher feedback to reflect on their learning, consolidate their understanding and work towards learning goals

Assessment of learning

- assists teachers to use evidence of student learning to assess student achievement against learning goals and standards

Assessment

If we want to use assessment as a tool for learning students need to:

- Know where they are going
- Know where they are now
- Know how to close the gap

Formative and Summative Assessment

Formative	Summative
Assessment for learning	Assessment of learning
Analyze strengths and weaknesses	Document achievement
Used to check students' understanding and to plan for subsequent teaching	Provides teachers, students and others with information about the attainment of knowledge and skills.
Must be used in a teaching model	May be used in subsequent teaching of different concepts.
Low stakes but very important	Stakes can range from low to high.

Defining large scale assessments

The British Columbia Government's large scale assessment policy:

The term large scale assessment refers to any provincial, national or international assessment, examination or test the Ministry directs boards of education to administer.

Large scale assessment purpose

The British Columbia Government's large scale assessment policy:

A primary purpose of large-scale provincial, national and international assessments and examinations is to obtain information for the purposes of public accountability, improving programs and certifying that students meet graduation requirements.

Large scale assessment focus

The British Columbia Government's large scale assessment policy:

Large scale assessments and examinations determine students' knowledge and skills in particular areas of learning.

Large scale assessment use

The British Columbia Government's large scale assessment policy:

Assessment information enables educational decision-makers at the classroom, district and provincial levels to make informed choices related to improving student achievement.

Using large scale student assessment to improve student achievement

Ungerleider (2006) makes the following points

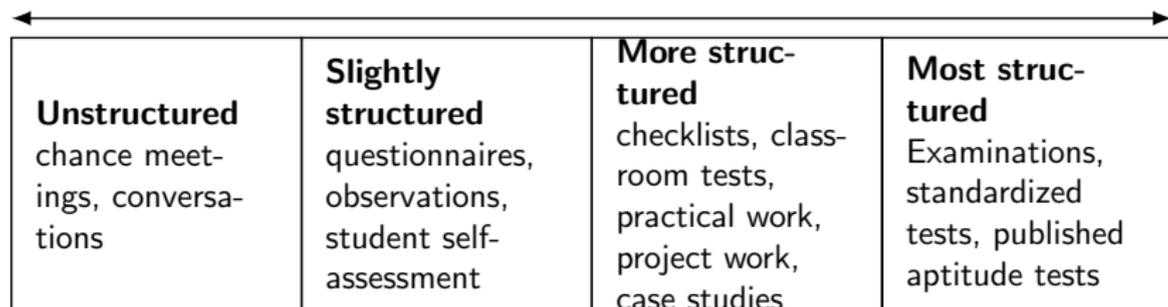
- there needs to be broad agreement about the outcomes for all students
- these must be detailed in the curriculum and supported by teaching material
- the educational community (students, teachers, parents) should be held accountable for the outcomes
- provide teachers with adequate time and training to interpret the outcomes

”The validity of any assessment result is conditional on the fit between the purpose for which the assessment was designed and the use of the results. At present there is no established procedure evaluating the validity of the alternative uses to which large scale assessments might be put. It is not unusual that an assessment developed for one purpose to be used for another. At present, the developers of the original test leave it to subsequent users to decide if its use is appropriate.”

(Ungerleider (2006), p. 875)

Assessment continuum

Assessment involves professional judgement based upon an image formed **by the collection of information** about student performance.

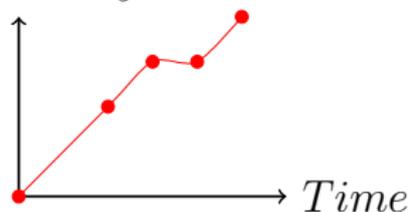
A diagram showing an assessment continuum. It consists of a horizontal double-headed arrow above a table with four columns. The columns represent increasing levels of structure from left to right: Unstructured, Slightly structured, More structured, and Most structured. Each column lists typical assessment methods for that level.

Unstructured chance meetings, conversations	Slightly structured questionnaires, observations, student self-assessment	More structured checklists, classroom tests, practical work, project work, case studies	Most structured Examinations, standardized tests, published aptitude tests
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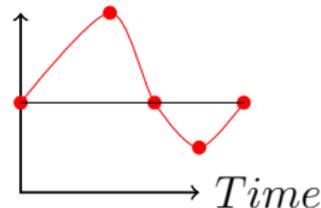
The Continuum

A continuum attempts to capture in words what it means to make progress or to improve in an area of learning or domain of knowledge. In noncognitive areas we think of the construct changing over time within a continuum.

Proficiency



Motivation



Example developmental continuum for recitation (Grades I and II)



Can recite poem or a story with proper speed, diction, expression and tone.

Can recite poem, or story with proper speed or expression but makes occasional mistakes in pronunciation or forgets at times.

Can recite poem, or story with occasional prompting. Expression is not very strong and effective.

Cannot recite an entire poem or story without prompting. Pronunciation expression is not appropriate.

Recitation is poor. Lacks expression.

Example developmental continuum for mathematics



The larger of two integers is $\frac{5}{2}$ the smaller. If twice the smaller is subtracted from twice the larger, the difference is 12. Find the two numbers.

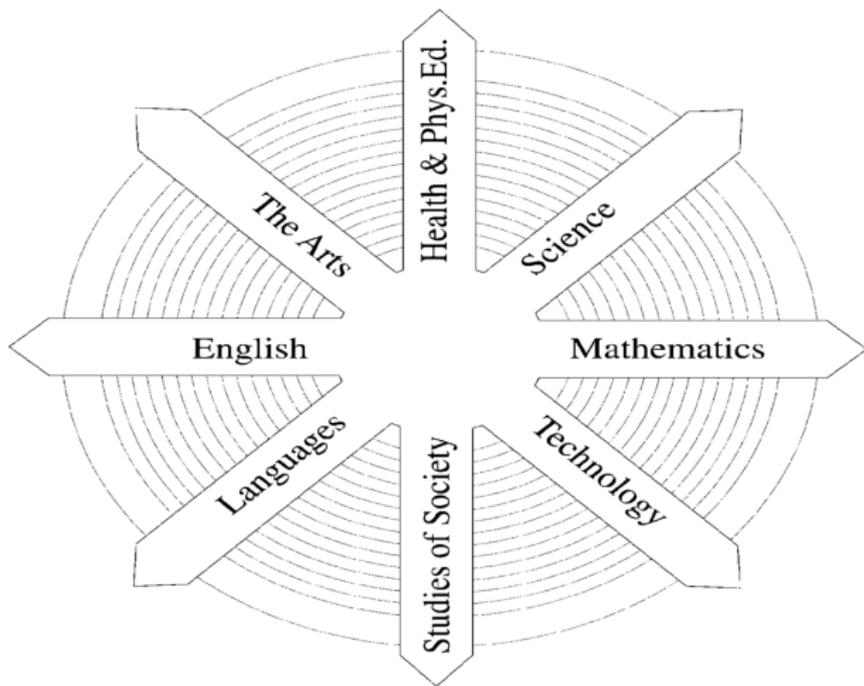
What is the difference between the largest and second largest numbers that can be made from the following digits: 3, 7, 4 and 6.

$$76 - 29 =$$

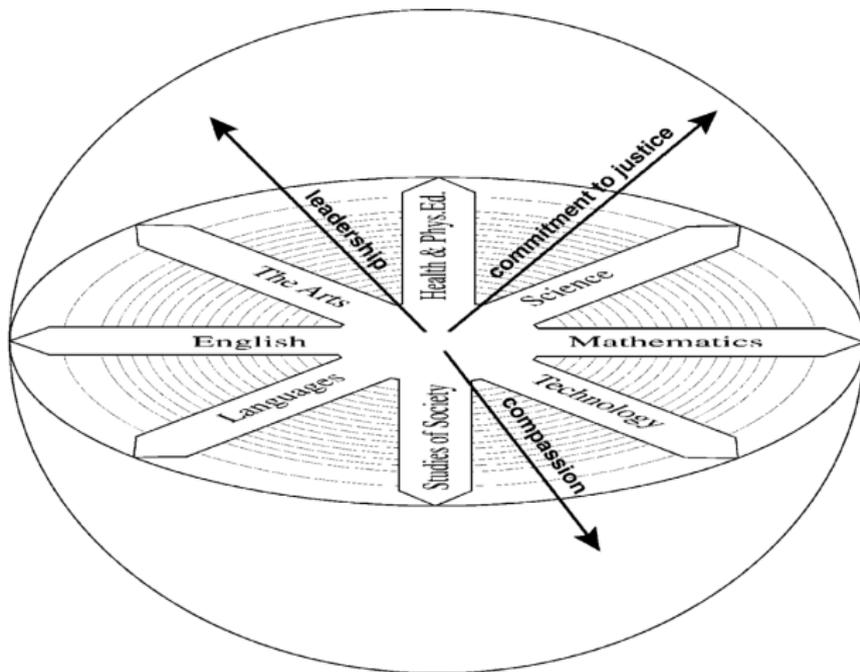
$$17 + 29 =$$

$$2 + 2 =$$

Traditional subjects

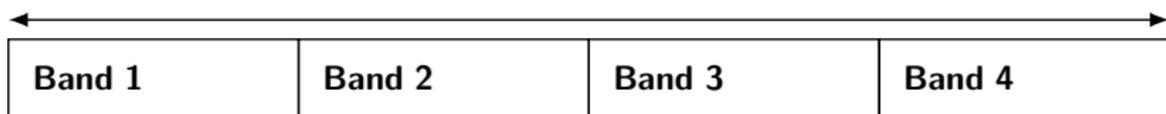


Traditional subject with noncognitive skills



Introducing standards

- We divide the continuum into areas to help make sense of it.
 - ▶ This helps us communicate what we mean by the continuum.
 - ▶ It simplifies what we are talking about and at the same time we do not exaggerate the accuracy of what we are measuring.
- In cognitive continua, we call these areas "performance standards" .
- We **describe what the person can do** for each standard.



Describing the standards

- We **describe what the person can do** for each performance standard.
- We call the process of describing each standard "standard setting".
- The easiest way of describing what students can do at each level is to get examples of students' work.
 - ▶ Using experts, we might get a large range and sample of students' work, sort it into four piles of increasing standard.
 - ▶ Then we describe what students in each pile can do using terms to describe the cognitive skills.

NAEP Generic Reporting scale

The USA approach to developing their achievement reporting scales has been to develop a generic or general description covering all scale areas.

Level	Description
Basic	Partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade.
Proficient	Solid academic performance for each grade assessed. Students reaching this level have demonstrated competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.
Advanced	Superior performance.

NAEP Generic Reporting scale

And then they add subject area specific descriptions.

Level	Description
Basic	Fourth-grade students performing at the Basic level should show some evidence of understanding the mathematical concepts and procedures in the five NAEP content areas. Fourth-graders performing at the Basic level should be able to estimate and use basic facts to perform simple computations with whole numbers, show some understanding of fractions and decimals, and solve some simple real-world problems in all NAEP content areas. Students at this level should be able to use though not always accurately four function calculators, rulers, and geometric shapes. Their written responses will often be minimal and presented without supporting information.
Proficient	refer to https://nces.ed.gov/nationsreportcard/mathematics/achieveall.aspx
Advanced	Fourth-grade students performing at the Advanced level should apply integrated procedural knowledge and conceptual understanding to complex and nonroutine real-world problem solving in the five NAEP content areas. Fourth-graders performing at the Advanced level should be able to solve complex and nonroutine real-world problems in all NAEP content areas. They should display mastery in the use of four-function calculators, rulers, and geometric shapes. The students are expected to draw logical conclusions and justify answers and solution processes by explaining why, as well as how, they were achieved. They should go beyond the obvious in their interpretations and be able to communicate their thoughts clearly and concisely.

The framework

The development of cognitive indicator starts with the development of a framework generally involves the following steps:

- widespread participation and reviews by educators and education officials;
- reviews by steering committees whose members represent policymakers, practitioners, and members of the general public;
- involvement of subject supervisors from education agencies;
- public hearings; and
- reviews by scholars in the field, by the study staff, and by a policy advisory panel.

Construct definition

Cognitive indicators need a definition that will define the construct throughout the study. The construct's meaning should not change during this time; it must be stable.

PISA mathematical literacy

" Mathematical literacy is an individual's capacity to formulate, employ, and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena. It assists individuals to recognise the role that mathematics plays in the world and to make the well-founded judgments and decisions needed by constructive, engaged and reflective citizens."

Scale characteristics

Generally, the numerical characteristics of the scale are described. The scale when IRT is used is generally a simple linear transformation of the mean and standard deviation obtained from the IRT analyses.

Scale characteristics

"PISA results are reported on a scale constructed using a generalised form of the Rasch model as described by Adams, Wilson and Wang (1997). For each domain (reading, mathematics and science), a scale is constructed with a mean score of 500 and standard deviation of 100 among OECD countries; accordingly, about two-thirds of students across OECD countries score between 400 and 600 points."

Then describe regions of the scale

Level	Location	Items	Description
2	409.5	ACID RAIN Q2 (460)	At Level 2, students have adequate scientific knowledge to provide possible explanations in familiar contexts or draw conclusions based on simple investigations. They are capable of direct reasoning and making literal interpretations of the results of scientific inquiry or technological problem solving.

Contextual Framework

International studies also include a contextual framework. From TIMSS 2011: "Because learning takes place within a context and not in isolation, TIMSS makes every attempt to collect information about the important factors that foster improved teaching and learning in mathematics and science. The questionnaires concentrate on procedures and practices that have been shown to be effective in increasing achievement in mathematics and science. In this way, countries can better evaluate their TIMSS results; in terms of the prevalence of the home or school situation or instructional practice in their country and its relationship with student achievement."

TIMSS Contextual Framework

broad areas

The TIMSS contextual framework specifies five broad areas:

- National and community contexts.
- Home contexts.
- School contexts.
- Classroom contexts.
- Student characteristics and attitudes towards learning.

Each of these areas is described using a number of measurements in the 20 page contextual framework.

Contextual Framework components

The TIMSS contextual framework specifies four questionnaire types:

- Curriculum questionnaire.
- Student questionnaire.
- Teacher questionnaire.
- Head teacher or principal questionnaire.

And describes what information each questionnaire is designed to gather and why.

TIMSS school questionnaire

This questionnaire is designed to take approximately 30 minutes to complete and has the following sections:

- School enrollment and characteristics.
- Instructional time.
- Resources and technology.
- School emphasis on academic success.
- School discipline and safety.
- Teachers in the school.
- School readiness.
- Principal experience and education.

TIMSS teacher questionnaire

This questionnaire is designed to take approximately 30 minutes to complete.

There are specific versions for specialist mathematics and science teachers:

- Characteristics of the teacher.
- School emphasis on academic success.
- Experiences of being a teacher.
- Experiences with the assessed class.
- And then questions for mathematics and science
 - ▶ Experiences teaching the subject.
 - ▶ Homework practices.
 - ▶ Assessment practices.
 - ▶ Preparation to teach.
 - ▶ Use of computers.

TIMSS student questionnaire

This questionnaire is designed to take approximately 30 minutes to complete and has the following sections:

- About the student.
- About the school.
- Mathematics in the school.
- Science in the school.