A way to think about measuring transversal, co-scholastic and all those difficult values, attitudes and skills that now punctuate modern curricula around the world

Presented by

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The inspiration for this talk and a lot of my measurement work

“If a thing exists, it exists in some amount. If it exists in some amount, it can be measured”

(Cronbach (1990).)
All aspects of student development.....

includes **Cognitive** AND **Non-cognitive** aspects of the students’ GROWTH.

**Cognitive** includes the subject specific areas

Knowledge, understanding and application has been traditionally well assessed; HOTS not that well assessed

**Non-cognitive** includes life skills, work education, co-curricular activities, attitudes and values

These areas have **not** been well assessed. In fact, their assessment has generally been ignored.

*To be comprehensive both aspects must be assessed*
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Definition of assessment

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

- **Less formal**
  - Unstructured
    - chance meetings
    - conversations
  - Slightly structured
    - questionnaires
    - observation
    - student self-assessment

- **More formal**
  - More structured
    - classroom tests
    - checklists
    - practical work
    - project work
    - case studies
The image

Teachers build images of what students know and can do based upon all the information that is collected from various assessment techniques.

The *IMAGE* is critical to teaching/learning and standard settings.
A new way of thinking about assessment

• Assessment is viewed as the process of monitoring a child’s progress along a developmental continuum.

• The focus shifts from comparing one individual with another, towards monitoring what students know and can do.

• It is a model based on growth.
The developmental continuum

A developmental continuum attempts to capture in words what it means to make progress or to improve in an area of learning or domain of knowledge.
Conceptual model for showing GROWTH in cognitive areas of learning.
Developmental continua
Starting with standards
(7 marks across a marking rubric for a task)
What are the steps in building marking rubrics for the non-cognitive skill areas?

**Step 1:** Define the non-cognitive skills (e.g. patriotism, life skills, attitudes, values) that will be covered by the assessment i.e. what it is the student should be able to demonstrate.

- Generally these rubrics accompany tasks/situations (structured and unstructured) that require the students to perform or behave in a particular way.

**Step 2:** Decide on the indicators to be used to give information about the non-cognitive skill

- The indicators are the parts of the non-cognitive skill by which student performances and behaviours are judged.
- The indicators must be as clear and unambiguous as possible.
- The number of indicators will depend on the skill being measured.
- There are many different indicators that can be used. The question is which ones are most relevant for you and your province.
- You can get lists of possible indicators by searching the internet and looking at what other cities/provinces/countries have done.
- The process of developing and refining indicators is iterative and involves many edits from different groups.
What are the steps in building marking rubrics for the non-cognitive skill areas?

**Step 3:** Develop descriptions of performance for each level of each criterion.

- Describe the performance that corresponds to that prescribed level. If the rubric has only one level then the description should be that of the highest level. **These are not comparative statements (all, some, none) but genuine descriptions of what characterises performance at the higher affective level.**
- If there is more than one level of performance for a criterion, then there should be descriptions of all levels of performance.
- **The descriptors are shown in increasing levels of “affectivity”.** Bloom’s Taxonomy has a hierarchy for the affective domain which outlines a framework for showing growth or progress along the continuum.

**Step 4:** Construct a task/situation that enables students to provide evidence as to how well they have achieved on each of the indicators and hence the non-cognitive skill.

- While the task is not strictly part of the rubric itself, it is necessary to make sure that the criteria and performance standards align with the purpose of the task and thus maximise the validity of the results.
Performance indicators of non-cognitive thinking skills

Critical thinking
- Defines problems in own words
- Compares and contrasts available solutions
- Selects and defends the final solution

Creative Thinking
- Developing a novel (original) product, idea, or problem solution that is of value to the individual and/or the larger social group
- Describing original products ideas and solutions
- Communicating new ideas to others effectively

Collaborative problem solving
- Sharing knowledge and understanding to solve a problem
- Organizing the group work and monitoring the progress
- Taking actions to solve the problem
- Providing constructive feedback to group members
- Communicating effectively and respectfully with diverse teams
**Step 1:** Define the non-cognitive skills (e.g. critical thinking) that will be covered by the assessment i.e. what it is the student should be able to demonstrate.

- Critical thinking is the ability to be able to define problems, compare and contrast available solutions and select and defend potentially correct solutions

- Defines problems in own words

- Compares and contrasts available solutions

- Selects and defends the final solution
Step 2: Decide on the indicators to be used to give information about the non-cognitive skill

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<tr>
<th>Indicators</th>
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<tbody>
<tr>
<td>Defines problems in own words</td>
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<td>Compares and contrasts available solutions</td>
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### Step 3: Develop descriptions of performance for each level of each criterion.

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<tr>
<td>Defines problems in own words</td>
<td>Not present</td>
<td>Identifies the main ideas or problems poorly with few or no details or states the main ideas verbatim</td>
<td>Tends to generate the main idea or problem with few details or examples. It has some organisation.</td>
<td>Identifies the main idea or problem with some supporting details and examples in an organized manner</td>
<td>Identifies the main idea or problem and gives relevant supporting details and examples which are logically supported</td>
</tr>
<tr>
<td>Compares and contrasts available solutions</td>
<td>Does not analyse multiple solutions</td>
<td>Provides unexplained and unsubstantiated inferences and tends to make many errors in distinguishing facts</td>
<td>Tends to be superficial in the reasoning in making inferences. Shows confusion in presenting facts as evidence.</td>
<td>Uses logical reasoning to make inferences regarding possible solutions. Addresses implications and consequences and presents facts that are mainly correct.</td>
<td>Uses specific inductive and deductive reasoning to make inferences regarding premises; addresses implications and consequences of decisions</td>
</tr>
<tr>
<td>Selects and defends the final solution</td>
<td>Does not select and defend solutions</td>
<td>Identifies and addresses one aspect of most problems. Tends to develop untestable solutions and draws conclusions which are not supported by evidence</td>
<td>Identifies and addresses some aspects of the problem; develops possible conclusions using some inappropriate opinions and irrelevant information from analyses.</td>
<td>Identifies and addresses key aspects of the problems and uses facts and relevant evidence from analyses to develop potentially valid conclusions.</td>
<td>Thoroughly identifies and addresses key aspects of the problem and insightfully uses facts and relevant evidence from analyses to support and defend their solutions.</td>
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Non-cognitive skills in China’s quality comprehensive evaluation framework

Some of the *non-cognitive skills* to be assessed are:

1. **Behaviour**: Students performance in civilized manners, thrift, love of knowledge and the labor situation, care for the environment and other aspects.

2. **Civic literacy**: Students cherish life, law-abiding, honest and trustworthy, unity and friendly, willing to help others and other aspects.

3. **Personality traits**: Students performance in self-esteem, self-discipline, respect for others and so on.

4. **Ideals and Beliefs**: Patriotism, national identity, social responsibility, collective consciousness, and other aspects of life.

5. **Subject thinking skills**: Students understanding and mastery of the thinking approach and methodology to each school subject.
Step 1: Define the non-cognitive skills (e.g. patriotism) that will be covered by the assessment i.e. what it is the student should be able to demonstrate.

Patriotism is the emotional attachment to a country that the student feels is home

- Love of one’s country
- Identification with one’s country
- Willingness to sacrifice for one’s country
**Step 2:** Decide on the indicators to be used to give information about patriotism

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<td>Love of one’s country</td>
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<td>Identification with one’s country</td>
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<tr>
<td>Concern for one’s country and the people in it</td>
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**Step 3:** Develop descriptions of performance for each level of each indicator.

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<td><strong>Love of one’s country</strong></td>
<td>• Students never mention their country</td>
<td>• Students refer to their country when prompted but rarely make any positive statements to show their affection</td>
<td>• Whenever the opportunity arises students take the opportunity to show their affection for their country.</td>
<td>• Students openly discuss their affection for their country and lead other students in organising activities to demonstrate this affection.</td>
</tr>
<tr>
<td><strong>Identification with one’s country</strong></td>
<td>• Know the history and basic conditions of the country and the nation;</td>
<td>• Be familiar with the history and basic conditions of the country and the nation;</td>
<td>• Understand the history and basic conditions of the country and the nation;</td>
<td>• Identify the history and basic conditions of the country and the nation;</td>
</tr>
<tr>
<td></td>
<td>• know national identifications (national flag, national emblem, national anthem, RMB, etc.);</td>
<td>• be familiar with national identifications (national flag, national emblem, national anthem, RMB, etc.);</td>
<td>• understand national identifications (national flag, national emblem, national anthem, RMB, etc.);</td>
<td>• respect national identifications (national flag, national emblem, national anthem, RMB, etc.);</td>
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<td></td>
<td>• know few current events and national development</td>
<td>• know current events and national development.</td>
<td>• pay attention to current events and national development.</td>
<td>• care for current events and pay attention to national development.</td>
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**Step 3:** Develop descriptions of performance for each level of each indicator.

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<td>Concern for one’s country and the people in it</td>
<td>• Contribution to the discussions about issues within their country.</td>
<td>• Students acknowledge their country and mouth concern for the people in it. However, this is usually not followed up with any actions.</td>
<td>• Students acknowledge issues that effect their country and show concern for the people in it. They celebrate its successes but they rarely, if ever, take a leadership role.</td>
<td>• Students lead others in showing concern for their country and the people in it. For example they are the ones who want get their friends to help people in floods or fires.</td>
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Step 1: Define the non-cognitive skills (e.g. social responsibility) that will be covered by the assessment i.e. what it is the student should be able to demonstrate.

Student social responsibility is the responsibility of every student for his/her actions

Students know the basic rights of individuals

Students act in such a way that minimises the adverse affect to those immediately around them

Students should have a commitment to contributing towards social, cultural and ecological causes.

Students demonstrate that their actions are driven by their ethical beliefs.
### Step 2: Decide on the indicators to be used to give information about social responsibility

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<td>Have a commitment to contributing towards social, cultural and ecological causes.</td>
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<td>Act in such a way that minimises the adverse affect to those immediately around them</td>
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<td>Know the basic rights of individuals</td>
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<td><strong>Have a commitment to contributing towards social, cultural and ecological causes.</strong></td>
<td>Rarely, if ever, acknowledges or contributes to causes</td>
<td>Takes personal responsibility for causes but does not dare point out any phenomenon contrary to social morality</td>
<td>Observes public order, upholds social morality, be able to point out any phenomenon contrary to social morality</td>
<td>Consciously safeguards social morality, has the courage to take any responsibility, task and mission</td>
</tr>
<tr>
<td><strong>Act in such a way that minimises the adverse affect to those immediately around them</strong></td>
<td>Gives very little thought to the social consequences of actions.</td>
<td>Gives thought to the social consequences of actions, but very rarely carries out any overt actions from these thoughts.</td>
<td>Is generally very conscious of the impact of actions on the people around and acts accordingly.</td>
<td>Is always very conscious of the impact of actions on the people around and acts accordingly. In addition, makes a point of drawing to the attention of others times when their actions are negatively impacting on other people.</td>
</tr>
<tr>
<td><strong>Know the basic rights of individuals</strong></td>
<td>Has little knowledge of citizens’ basic rights and obligations</td>
<td>Has some knowledge of citizens basic rights and knowledge.</td>
<td>Understands citizens basic rights and knowledge.</td>
<td>Has an excellent grasp of citizens basic rights and knowledge and is prepared to challenge and argue for these rights. Is a champion of the right of fellow students.</td>
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**Step 2**: Decide on the indicators to be used to give information about social responsibility

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<td>Demonstrate that their actions are driven by their ethical beliefs.</td>
<td>There is a distinct difference between what one says and how one acts when interacting with others.</td>
<td>On many occasions shows consistency in what they believed and how they act. Has difficulty in expressing ethical beliefs.</td>
<td>Understands what ethical beliefs are and on most occasions acts in accord with these beliefs.</td>
<td>Is quite outspoken about what the beliefs are; always acts in accordance with the beliefs; and is prepared to challenge people who say one thing and do another.</td>
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Some points to remember when assessing affective skills

1. Like any other classroom-based assessment, the assessment of ideals and beliefs; ability to think; exhibit aesthetic taste; etc. is an on-going observational process. These types of skills emerge when there is an active interaction between teachers and students or when students are engaged in various activities, projects, assignments, etc.

2. There are a number of different ways for making observations of the behaviours, values and attitudes of individuals unobtrusively. The goal of the observation is to capture the manifestation of the students’ social/emotional skills as they deal with their own self, manage their own feelings, own self-control, etc.

3. In order to achieve some level of standardisation across the system, the monitoring agency would generally identify the standards (indicators) that impact students’ behaviours, beliefs and attitudes in different situations. These are presented to teachers as monitoring standards.
Some points to remember when assessing affective skills

4. The teachers must ensure that the behaviour of the students is observed methodically and supporting evidence is documented carefully.

5. Observations should be made in different contexts and must not be restricted to just one or two activities/tasks.

6. Teachers cannot be judgmental about students’ behaviour without knowing the context. Observation, thus, helps them to make more accurate interpretations and get a better understanding of the transactional behaviours of students, including their temperament, mood, expression, beliefs, emotions, way of communicating etc., in their natural settings.

7. Teachers can use different observation techniques. They can also use questionnaires and interview schedules to build psychometric scales in combination with other tools/techniques of assessments.
Some further points to remember when assessing affective skills

1. In reality the teacher would start off the year with all learners located a mark of 3, for example, on the specified indicators.

2. As the year progresses the teacher would look for evidence on every occasion (formative assessment) to see which of the learners in the class are varying from the original expectation and record those instances (through anecdotal records, samples of work, etc.).

3. Learners would vary about the expected value. In this way the teacher is always looking for variations from expectation. Rick gave a really creative answer to the last exercise; Jim really reported on a faulty gas tap in the laboratory; etc. This is evidence that Jim could be a 4 on the rubric on the social responsibility rubric.

4. At the time of reporting on the affective skills the teacher would complete the rubric for each learner. Of course most would have the expected pattern; but, some would have different patterns where the evidence for the behaviour has been recorded by the teacher.

5. While the teacher would have the evidence to support the pattern – the learner would also know from feedback during class during the year that he/she has well developed skills or values according to the description of the performance indicators.
Practical activity for building a non-cognitive skills rubric
Practice Activity
Developing rubric for honesty

Step 1: Each participant will be given a “sticky dot”

Step 2: Each participant will then be asked to come and locate themselves (without taking account of other participants” along a developmental continuum for “honesty”. The right hand end of the continuum will mean that you believe you are more “highly-creative”; the left hand end is more “non-Creative”.

Step 3: The trainer will then ask people at various locations along the continuum to call out reasons why they located themselves at that point (without identifying which point they are referring to). The trainer will record these descriptions in 3 to 5 groups.

Step 4: All participants will then attempt to capture the comments into a summary of the characteristics of what you all believe to be creativity.

Step 5: The same exercise will then be carried out for another criterion of the thinking skills (e.g. motivation).