ASSESSMENT

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What is Assessment

- "Assessment involves collecting and interpreting evidence of students' learning, using this evidence to make judgments about the quality of learning, and communicating these judgments to different audiences." *(Goos, 2007)*

Purpose of Assessment

- To gather information regarding the performance of individual students and class as a whole.
- To improve overall delivery and reception of outcomes and curriculum material.

Types of Assessment

Formative Assessment

- Implemented throughout teaching and learning cycle.
- Does not just involve grading and evaluation.
- Determines whether the student is progressing at an acceptable rate.
- Involves feed back to improve performance.

Types of Assessment

Summative Assessment

- Final representation of a students performance.
- Combination of all evaluations recorded throughout the course.
- Usually involves a final evaluation of outcomes and material at the end of the course.

Assessment in the Mathematics Classroom

- Give a pretest on their knowledge of probability before beginning the unit.
- Get students to work on problems in teams as you circulate around the room, listening to their conversations and helping.
- Collect homework assignments and record results in grade book

Assessment in the Mathematics Classroom

- Ask students to go to the board to work through solutions to assigned homework problems.
- Give a unit test at the end of the probability section of the curriculum.
- Ask students to write journal entries, summarizing the major points of the unit and discuss which lessons were most effective for them and why.

Results of Assessment

- Leads to day to day modifications of lesson plans.
- Can have long term effect on curriculum outcomes.
- Teachers are able to provide needed intervention immediately.

Aligning Assessment to the Curriculum

- Tests and exams have limited timeframe.
- Questions must be applicable to specific outcomes.
- Questions may require certain conjectures, strategies, and justifications.

JUDGEMENT MODELS AND TEACHER CONSISTENCY

Evidence-based judgment models

Norm-referenced judgment models

- Compares student performance to that of other students
- Teachers establish a grading curve
- Grades have a relative rather than absolute meaning
- Could influence the effort and attitude put forth by students

Norm-referenced judgment models

A	Top 20 percent of students
B	Next 30 percent of students
C	Next 30 percent of students
D	Next 10 percent of students
F	Last 10 percent of students

Criterion-referenced judgment models

- Judges scores or performances in relation to a predefined set of criteria
- The most commonly used grading system in schools
- There is no limit to the number of students who can receive a particular grade

Criterion-referenced judgment models

Performance-based criteria

- Spell out in detail the specific learning students must demonstrate to receive a particular grade

Percentage-based criteria

- Uses cutoff scores based on the percentage of items answered correctly

Standards-referenced judgment models

- There are 4 basic methods of specifying standards

  - Numerical cutoffs
  - Tacit knowledge
  - Exemplars
  - Verbal descriptors

Developmental-based assessment (DBA)

- Relies on teachers interpreting students' responses within a framework of cognitive developmental growth

Table 6.1 SOLO taxonomy

Response level	Meaning
Unistructural	Responses use single elements of the task, often with contradictions between them.
Multistructural	Responses use multiple elements of the task.
Relational	Responses create connections among elements of the task to form an integrated whole.

- Has been proven invaluable in helping teachers realize the degree of understanding held by students

Consistency of teacher judgments

- Teacher judgments should be consistent across students and tasks, and consistent with the judgments made by other teachers within and outside the school
- Critical for high-stakes assessment that could determine scholarships, highly sought-after places in prestigious institutions

Consistency of teacher judgments

Moderation

- Teacher judgments must be able to stand up to scrutiny by expert practitioners external to the school

Consistency of Teacher Judgment

Rubrics

- Tools for rating the quality of student performance
  - Holistic scoring
  - Analytic scoring
- Holistic rubrics use general descriptors for levels of performance

Table 6.3 Everyday rubric grading

E	**Excellent example**	Meets or exceeds expectations. Complete, clear communication. Clear understanding. Any error is trivial.
M	**Meets expectations**	Understanding is evident. Needs some revision or expansion, but written comments are enough. No additional teaching needed.
R	**Needs revision**	Partial understanding is evident, but significant gap(s) remain. Needs more work/teaching/communication.
F	**Fragmentary**	Clearly misunderstands. Insubstantial attempt made.

- Analytic rubrics are used for test or exam tasks, as well as for performance and problem-solving tasks

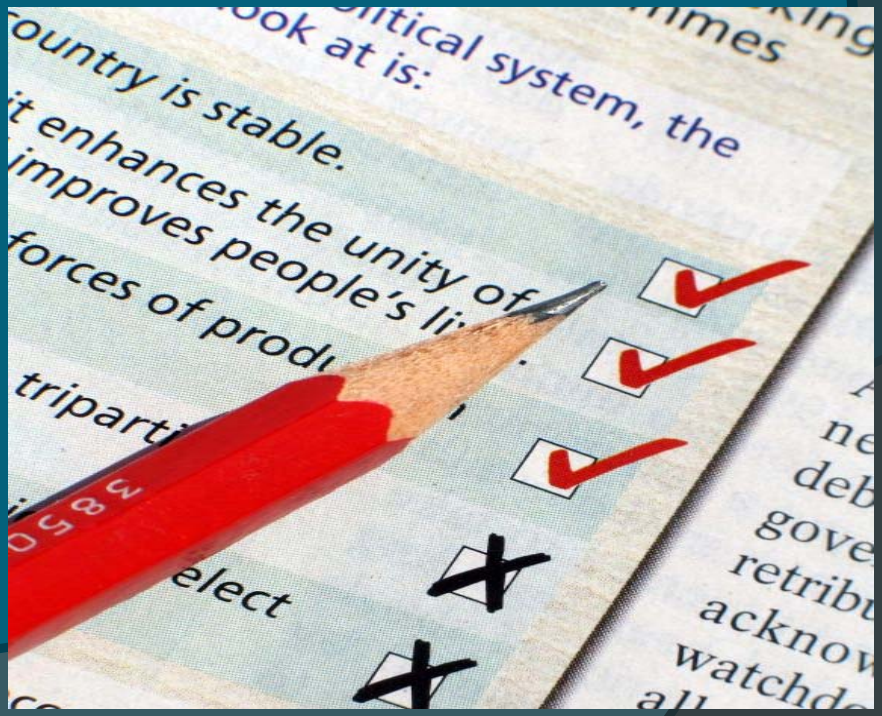
Table 6.5 Rubric for communication category judging and scoring criteria for Maths Talent Quest

Sub-category	High	Score	Medium	Score	Low	Score	Not evident	Score
A Approach to the investigation	The approach to the investigation is explicit with aims and goals, a thorough plan for solving and conclusions clearly stated.	4	The approach to the investigation is often clear with aims, goals, a plan for solving and with conclusions stated.	3	The approach to the investigation and aims and goals are stated.	2	There are no aims and goals given and the approach to and planning for the investigation is unclear. Conclusions were unclear or not stated.	0
B Use of mathematical terminology	Precise and appropriate mathematical terminology and notation is used to support mathematical thinking and communicate	4	Mathematical terminology and notation in the solution is used to share ideas.	3	Some mathematical terminology and notation to communicate is used.	2	No mathematical terminology and notation is used or everyday, familiar language to communicate ideas is used.	0

Recording

- Keeping records of students' progress throughout the school year
- Helps in the process of providing feedback to students, and informing parents and other teachers

- Checklists
- Spreadsheets
- Electronic records



Reporting

- Important to know the audience to who we are giving feedback

Reporting results to students

- provide a briefing to the entire group of students
- give the option of follow-up meetings to discuss why they received a their grade

Reporting to parents

- individual parent/teacher conferences
- an individual written report send home
- parent group meetings
- parent newsletter articles

EVIDENCE OF STUDENT LEARNING: TYPES OF ASSESSMENT

Equity And Assessment

- Equity implies fairness and equality to all students so they may achieve their full potential
- An opportunity should be available for students to display concepts consistent with their learning style
- Tests and assignments predominate assessment methods in math courses
- Research shows that a wider variety of assessment methods improves learning

Problems with Equity

- Potentially much more work for teachers
- Difficult for beginning teachers
- May transend own understanding of mathematics
- Different learning styles

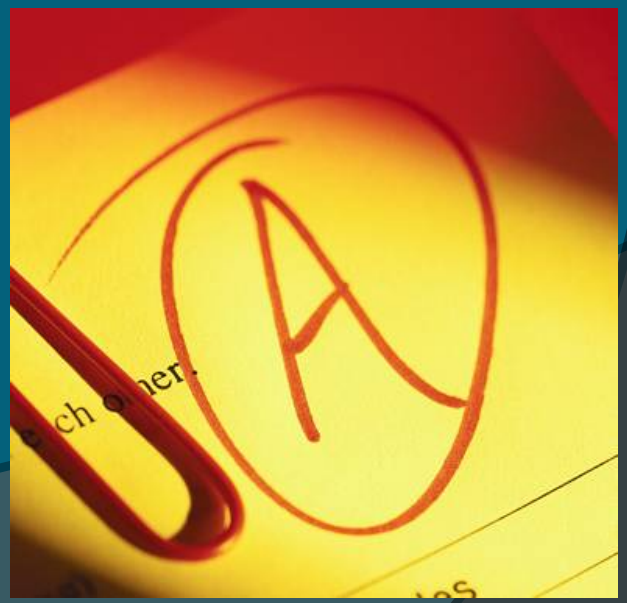
offer different challenges

- Small-scale implementatio

Common Assessment Methods

Tests and Exams

- Formal
- Usually stressful
- Can focus on answer or process
- May consider involving students in creation



Common Assessment Methods

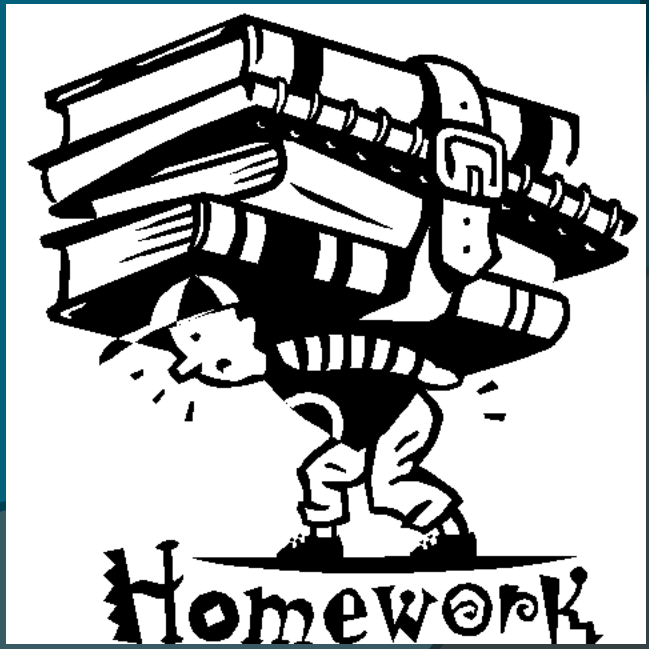
Assignments

- Practically ‘take-home’ tests
- Less stressful
- Effective if more difficult and longer than tests
- Be prepared for very similar answers

Common Assessment Methods

Homework

- Teacher chooses amount and frequency
- Varying importance for different teachers
- Multitude of correction methods
- Can be used as a way to review previous lesson



Common Assessment Methods

Teacher Classroom Questions

- Effective questioning can take practise
- Simple way to gauge understanding
- Can help students understand what they already know
- Some people may not like to be asked questions in class

Common Assessment Methods

Team or individual projects

- Used to evoke creativity, problem-solving and/or research
- Can be used to show individuality or cooperation

Self-Assessment

- Students gauge their own progress
- Come to explore and contemplate their own understanding of material

	KWL Chart: Topic	
Know about	Want to learn about	Have learned about

- Usually many correct methods and answers
- Rubric useful for grading

Self-Assessment Methods

Open-ended questions

- Asking a question with little guidance
- Great opportunity for thought

Journals

- Contains students writing, approaches and opinions
- Helps teacher recognize different thought processes

Year-round assessment

Portfolio

- Creation and evaluation are time consuming
- Gives opportunity to see improvement
- Students who take it seriously show greater improvement
- Can collect over the year or at the end

Year-round assessment

Observation

- Arguably the most useful form of assessment
- Teachers can inform students of what they are looking for
- Easiest way to evaluate performance objectives

The Test Making Process

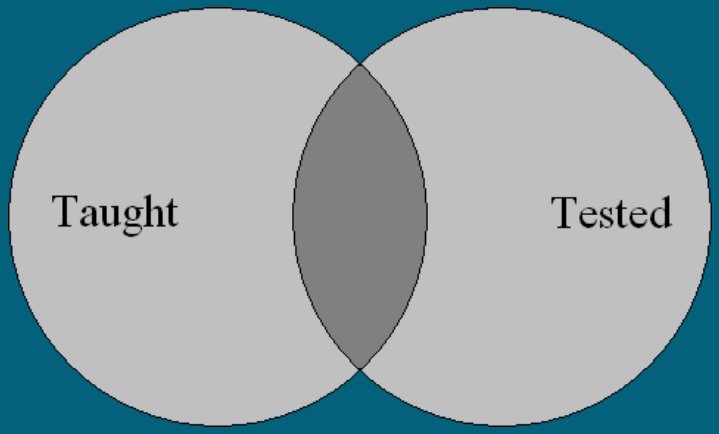
THE RIGHT WAY TO DO IT

Validity and Reliability

"Are the question formats and tools required for success on this test the same ones that I have emphasized in class during each day of the unit" *(Brahier, 2005)*

Validity

"Validity is a measure of the degree to which a test actually measures the content that the teacher intends it to measure." *(Brahier,2005)*



Reliability

"The reliability of a test refers to the likelihood that a student will obtain roughly the same score if given different versions of the test multiple times." *(Brahier, 2005)*

Adherence to The SCO's

- The purpose of a test is to "determine the degree to which students have mastered the objectives set forth in the unit and lesson-planning process"*(Brahier, 2005)*

Minimize the Success of Guess Work

- Phrase questions so that the answer provides insight into the topic

Impossible Tests

Scoring Student Work

- The answer is the most important part of a student's solution
- The process is more important than just getting the answer
- The process is equally as important as the answer

Assessment

I find your lack of testing disturbing!

Reference List

Brahier, Daniel J. (2005). *Teaching Secondary and Middle School Mathematics, 243-293.*

Goos, Merrilyn, Stillman, Gloria, & Vale, Coleen (2007).*Teaching Seconday School Mathematics, 127-157.*