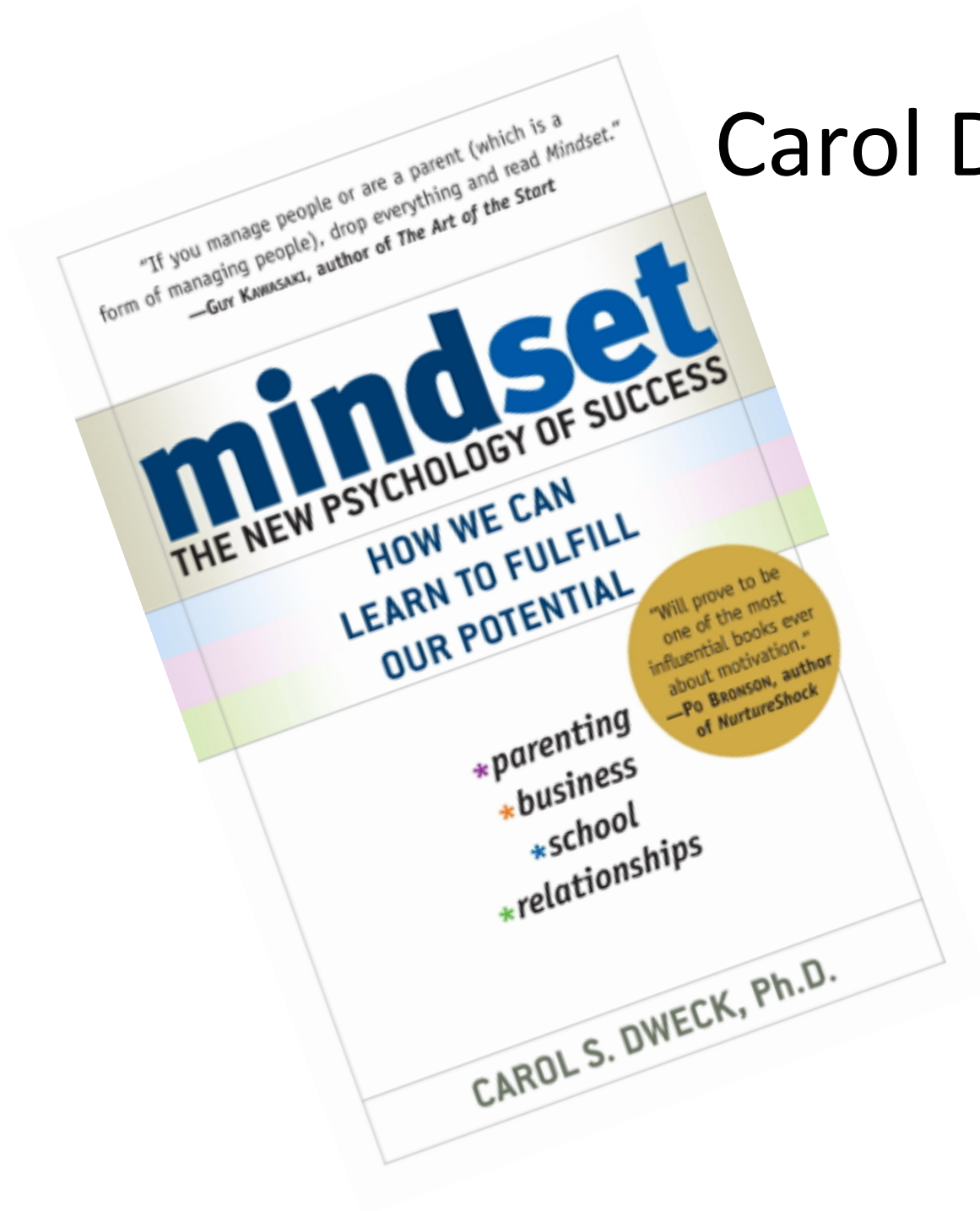


A glowing blue brain is the central focus, surrounded by a network of white and blue lines representing neural pathways. The brain is set against a dark blue background with a faint silhouette of a human head. The overall aesthetic is futuristic and scientific.

# Creating Students with a Growth-Mindset

Jennifer Throndsen  
Evidence-Based Learning Department  
Canyons School District

# Carol Dweck's Work



# Two Types of Mindset



**Carol S. Dweck on how the two mindsets  
influence behavior and achievement**

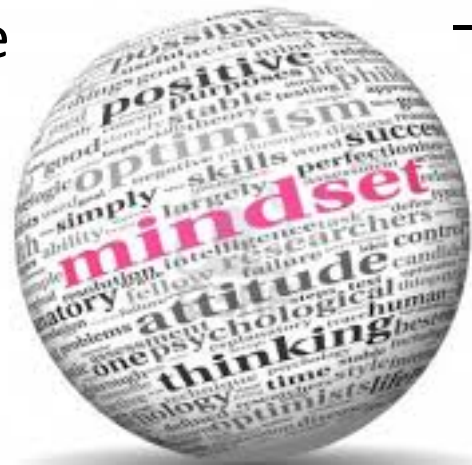
# The Mindsets

- Fixed

- Believe that your qualities are carved in stone
- Will avoid failure
- Fear challenge

- Growth

- Belief that your basic qualities are things you can cultivate through effort
- Views failure as an opportunity to learn and grow



Fixed Mindset	Growth Mindset
Intelligence is static.	Intelligence can be developed.
Leads to a desire to <i>look smart</i> and therefore a tendency to	Leads to a desire to <i>learn</i> and therefore a tendency to
<ul style="list-style-type: none"> <li>• avoid challenges</li> </ul>	<ul style="list-style-type: none"> <li>• embrace challenges</li> </ul>
<ul style="list-style-type: none"> <li>• give up easily due to obstacles</li> </ul>	<ul style="list-style-type: none"> <li>• persist despite obstacles</li> </ul>
<ul style="list-style-type: none"> <li>• see effort as fruitless</li> </ul>	<ul style="list-style-type: none"> <li>• see effort as path to mastery</li> </ul>
<ul style="list-style-type: none"> <li>• ignore useful feedback</li> </ul>	<ul style="list-style-type: none"> <li>• learn from criticism</li> </ul>
<ul style="list-style-type: none"> <li>• be threatened by others' success</li> </ul>	<ul style="list-style-type: none"> <li>• be inspired by others' success</li> </ul>

So what kind of students do you want?

**FIXED OR**

**GROWTH**

**MINDSET?**

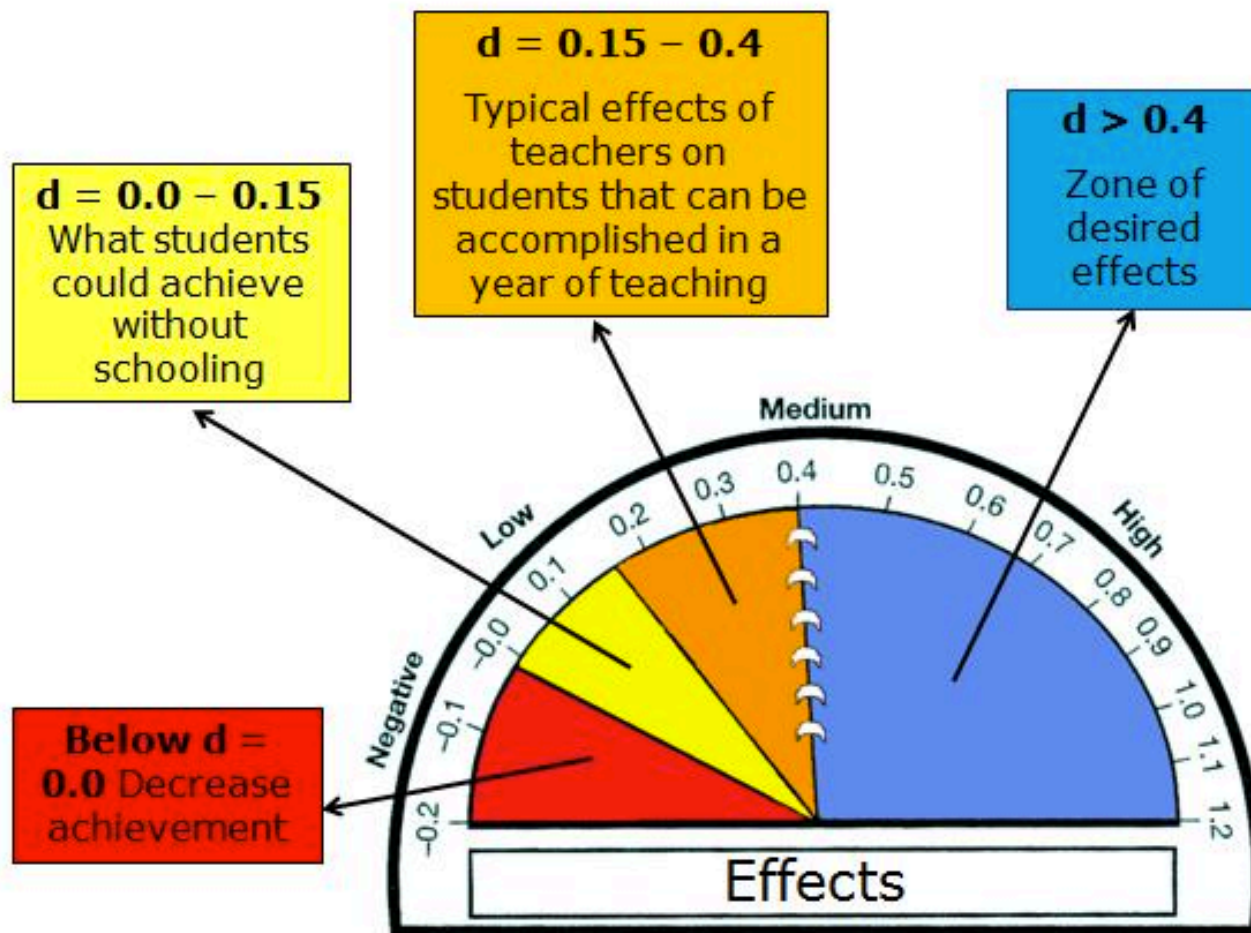


# Growing Growth-Mindset Learners



# Hattie's Work: Visible Learning

## Barometers of Influence

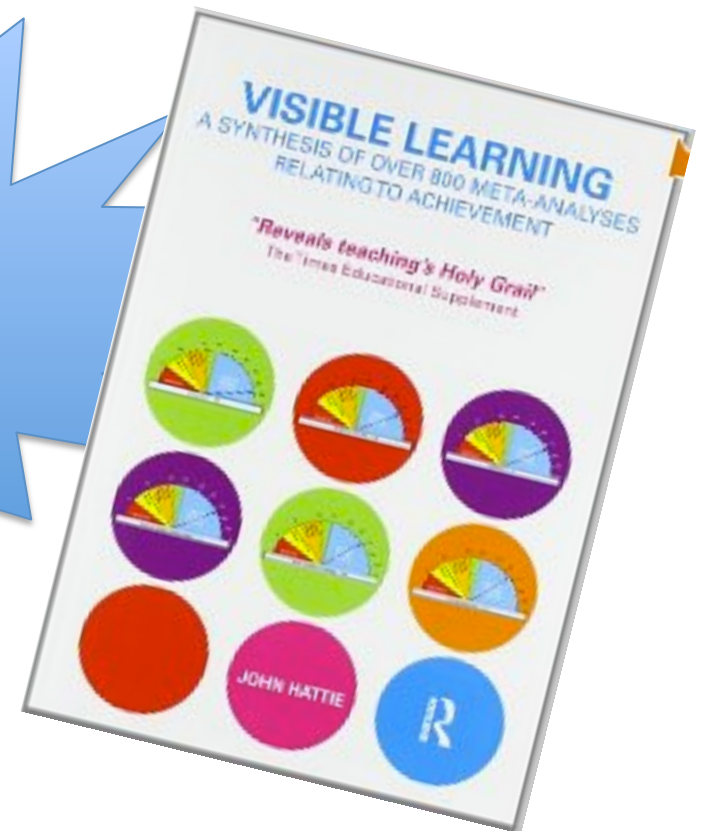




# What's the Effect Size?

- Effect Size
- Student Self-Assessment and Grading
  - Highest effect size

1.44



# Power of Student Self-Assessment

- When teachers seek, or at least are open to, feedback from students as to what students know, what they understand, where they make errors, when they have misconceptions, when they are not engaged—the teaching and learning can be synchronized and powerful.
- Hattie (2009), p.173

# How to do it

- Engage students in setting challenging goals
- Goals should emphasize progress, not ability
  - Connected to effort
  - Student to teacher feedback

# What is it?

- Students learn:
  - How to assess their own progress by asking key questions about their learning
    - Where am I now?
    - Where am I trying to go?
    - What do I need to get there?
    - How will I know I have accomplished what I set out to do?







# Benefits for Students

- Development of metacognitive skills—students become more skilled at adjusting what they are doing to improve the quality of their work
- Positive effects for low achievers—reducing achievement gaps
- Development and refinement of students' capacity for critical thinking
- Increased mathematics problem-solving ability
- Reduction in disruptive behavior



# **SAMPLES OF DIFFERENT TOOLS FOR SELF-ASSESSMENT**

# Learning Goals with Success Criteria

Learning Goal	Success Criteria	How well do you understand this concept?	How did you do on assessments/homework?	Reflections and Next Steps
		  		
		  		

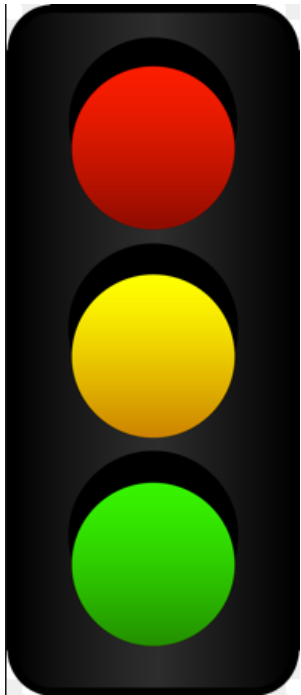
## Student Self-Assessment Rubric

	<p><b><u>Exceeds</u></b></p> <p><b>I can do it without mistakes. I can help others.</b></p>
	<p><b><u>Proficient</u></b></p> <p><b>I can do it by myself! I make little mistakes.</b></p>
	<p><b><u>Developing</u></b></p> <p><b>Sometimes I need help. I am starting to understand.</b></p>
	<p><b><u>Novice</u></b></p> <p><b>I can't do it by myself. I don't understand yet.</b></p>

# Scoring Guide

- 1 = I do not know anything about ...
- 2 = I know that I've heard about ... before, but I need a refresher.
- 3 = I remember a few things about ...
- 4 = I know a lot about ...
- 5 = I could teach ... to another student.

# Simplified Scoring Guide



- **Red:** I don't get it.
- **Yellow:** I am starting to understand, but I need more practice.
- **Green:** I got it!



Happy Face: I got it!



• Straight Face: I still have questions.



• Squiggly Face: I am not sure what to do.





Student Effort and Understanding Self-Assessment

**Math Learning Objectives**

Unit: Operation Addition

Name: \_\_\_\_\_

Date	Lesson Objective	Effort Rating (1-5)	Understanding Before Lesson (1-5)	After Lesson (1-5)
10/21/13	write <u>addition</u> equations to match problems			
10/22/13	use <u>drawings</u> AND <u>equations</u> to match problems			
10/23/13	solve <u>3</u> quiz questions using drawings and <u>equations</u>			
10/24/13	use <u>counting on</u> strategy to solve addition equations			
10/25/13	use <u>counting on</u> strategy to solve addition equations			

CCSS.Math.Content.1.OA.A.1 Use addition and subtraction within 20 to solve problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g, by using objects, drawing, and equations with a symbols for the unknown number to represent the problem.

Student Effort and Understanding Self-Assessment








**Math Learning Objectives**

Unit: Place Value Understanding

Name: \_\_\_\_\_

Date	Lesson Objective	Effort Rating (1-5)	Understanding Before Lesson (1-5)	After Lesson (1-5)
10/21/13	<u>identify</u> the place value of digits to the thousands place			
10/22/13	<u>identify</u> the place value of digits to the <b>millionths</b> place			
10/23/13	<u>read</u> and write multi-digit whole numbers using base-ten numerals and expanded form			
10/24/13	<u>read</u> and write multi-digit whole numbers using base-ten numerals, <b>written form</b> , and expanded form			
10/25/13	<u>compare</u> two multi-digit whole numbers using place value			

CCSS.Math.Content.4NBT.A.1 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on the meaning of digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of the comparisons.

	Monday	Tuesday	Wednesday	Thursday	Friday
<b>Goal</b> 	My goal today is to _____ _____.	My goal today is to _____ _____.	My goal today is to _____ _____.	My goal today is to _____ _____.	My goal today is to _____ _____.
<b>Math</b> 	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4
<b>Reading</b> 	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4
<b>Science S.S.</b> 	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	<b>ART</b>	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4
<b>Word Study</b> 	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4
<b>Writing</b> 	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4	We are learning about _____. Before: 1 2 3 4 After: 1 2 3 4
<b>Goal</b> 	_____ yes _____ no Why? _____ _____	_____ yes _____ no Why? _____ _____	_____ yes _____ no Why? _____ _____	_____ yes _____ no Why? _____ _____	_____ yes _____ no Why? _____ _____
Questions _____					

**1** = I do not know **2** = I know a little, but I still need to practice **3** = I know all about it and I'm ready for a test **4** = I know above and beyond!

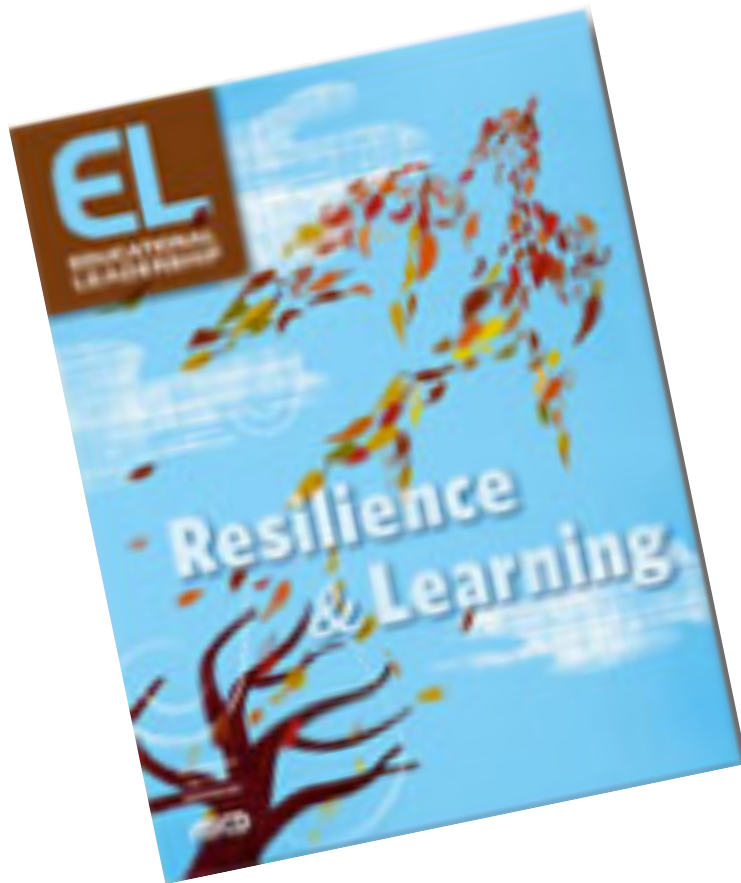





# Learning Task

- Think about the next math topic you will be teaching
- What are the key learning objectives?
- What self-assessment tool might work best?
  - Consider your grade
  - Consider the content

# Additional Resources



 Ontario

The Literacy and Numeracy Secretariat  
**CAPACITY BUILDING SERIES**



SECRETARIAT  
SPECIAL EDITION # 4

**The Capacity Building Series**  
is produced by The Literacy and Numeracy Secretariat to support leadership and instructional effectiveness in Ontario schools. The series is posted at: [www.edu.gov.on.ca/eng/literacy/numeracy/inspire/](http://www.edu.gov.on.ca/eng/literacy/numeracy/inspire/)

**Why student self-assessment?**  
“Self-assessment by pupils, far from being a luxury, is in fact an essential component of formative assessment. When anyone is trying to learn, feedback about the effort has three elements: recognition of the desired goal, evidence about present position, and some understanding of a way to close the gap between the two. All three must be understood to some degree by anyone before he or she can take action to improve learning ... If formative assessment is to be productive, pupils should be trained in self-assessment so that they can understand the main purposes of their learning and thereby grasp what they need to do to achieve.”  
(Black & William, 1998, p. 143)

**STUDENT SELF-ASSESSMENT**

Assessment practices have started to change over the last several years with teachers building a larger repertoire of assessment tools and strategies. There is a greater understanding of the importance of timely assessments for learning as well as regular assessments of learning.

One type of assessment that has been shown to raise students’ achievement significantly is student self-assessment (Black & William, 1998; Chappuis & Stiggins, 2002; Rolheiser & Ross, 2001; White & Frederiksen, 1998).

Confidence and efficacy play a critical role in accurate and meaningful self-assessment and goal-setting. Rolheiser, Bower, and Slevahn (2000) argue that self-confidence influences “[the] learning goals that students set and the effort they devote to accomplishing those goals. An upward cycle of learning results when students confidently set learning goals that are moderately challenging yet realistic, and then exert the effort, energy, and resources needed to accomplish those goals” (p. 35). By explicitly teaching students how to set appropriate goals as well as how to assess their work realistically and accurately, teachers can help to promote this upward cycle of learning and self-confidence (Ross, 2006).

**Terminology of Assessment**

Clear and concise definitions of key terms help to ensure that everyone understands the nature of student self-assessment and its role in student achievement.

**Assessment** is the process of “gathering information ... from a variety of sources that accurately reflects how well a student is achieving the curriculum expectations in a subject” (Ministry of Education, 2006d, p. 15).

**Student self-assessment** is “the process by which the student gathers information about and reflects on his or her own learning ... [it] is the student’s own assessment of personal progress in knowledge, skills, processes, or attitudes. Self-assessment leads a student to a greater awareness and understanding of himself or herself as a learner” (Ministry of Education, 2002, p. 3).



December 2007  
ISSN: 1913 8482 (Print)  
ISSN: 1913 8490 (Online)

# Feedback



- Feedback fills the gap between what is understood and what is aimed to be understood.

– Hattie and Timperley, 2007

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