

The black box of tertiary assessment

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**Symposium on Tertiary
Assessment and Higher
Education Student Outcomes:
Policy, Practice, and Research**

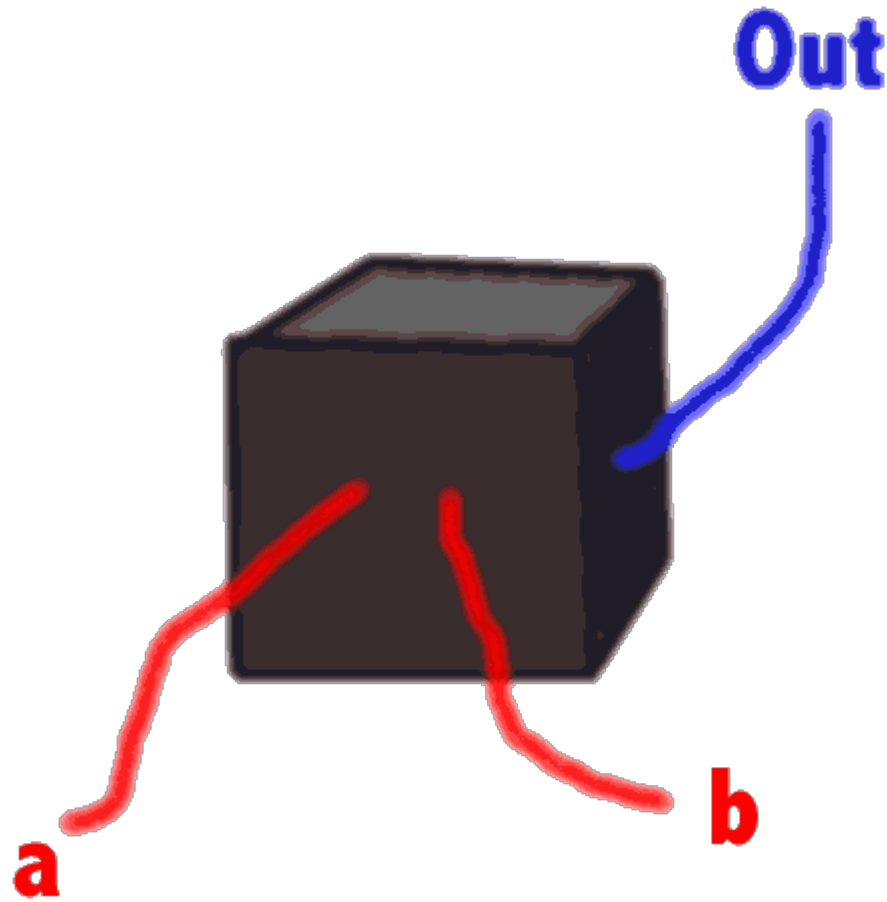


A revolution in assessment ...

- **Assessment *for* Learning**
- **NCEA & its standards based approach**
- **Emphasis on reporting more than scoring**
- **Peer collaborative assessment**
- **Learning intentions and success criteria**
- **Realization of the power of feedback**
- **Constructive alignment of learning & outcomes**

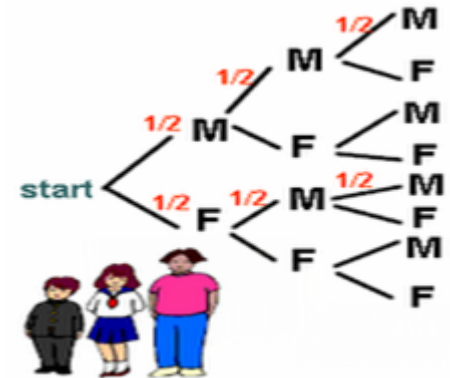


Inside the black box



1. The multiple outcomes

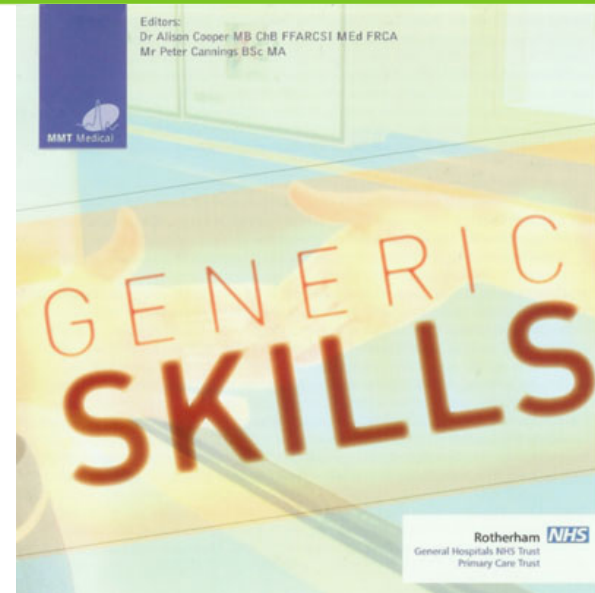
- I. **Achieving competence**
- II. **Managing emotions** – from those that interfere with learning (anger, anxiety, hopelessness – to those that assist (optimism, helpfulness).
- III. **Mature interpersonal relations** – respecting differences, working with peers
- IV. **Moving from autonomy to independence** – moving from needing assurance and approval of others to self-sufficiency, problem solving, and making decisions
- V. **Establishing identity** – self-esteem and self-efficacy
- VI. **Developing purpose** – from Who am I? and Where am I? to Where am I going?
- VII. **Developing integrity**



Assessing Higher Education Learning Outcomes (AHELO) - OECD

1. Generic skills

- critical thinking
- analytic reasoning
- problem-solving
- written communication skills
- generation of knowledge
- interaction between substantive and methodological expertise



Assessing Higher Education Learning Outcomes (AHELO) - OECD

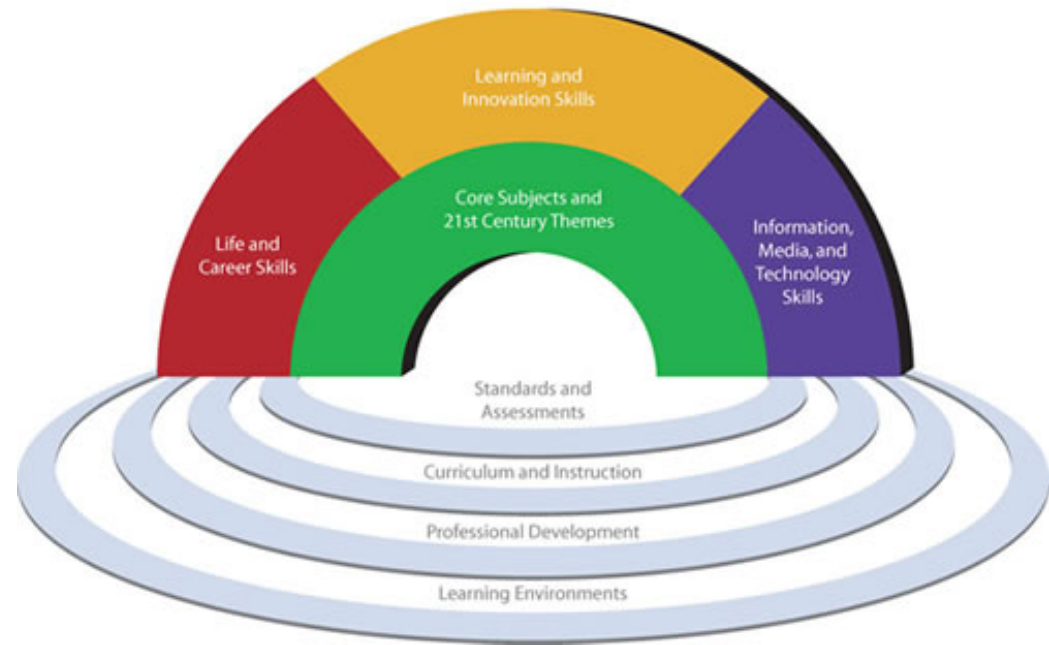
1. **Generic skills**
2. **Discipline-specific skills**

engineering and economics.



Assessing Higher Education Learning Outcomes (AHELO) - OECD

1. **Generic skills**
 2. **Discipline-specific skills**
 3. **Student outcomes**
- **absolute performance or raw scores of students**
 - **a measure of incremental learning (or “value-added”)**



Assessing Higher Education Learning Outcomes (AHELO) - OECD

1. **Generic skills**
2. **Discipline-specific skills**
3. **Student outcomes**
4. **Contextual measures**

- Academic studies and teaching (contact between students, counseling, courses offered, opportunities for e-learning, study organization and teaching evaluation);
- Equipment
- International orientation
- Job market and career orientation
- Research
- Study location and TEI
- Overall opinions



Research vs. Research + Teaching

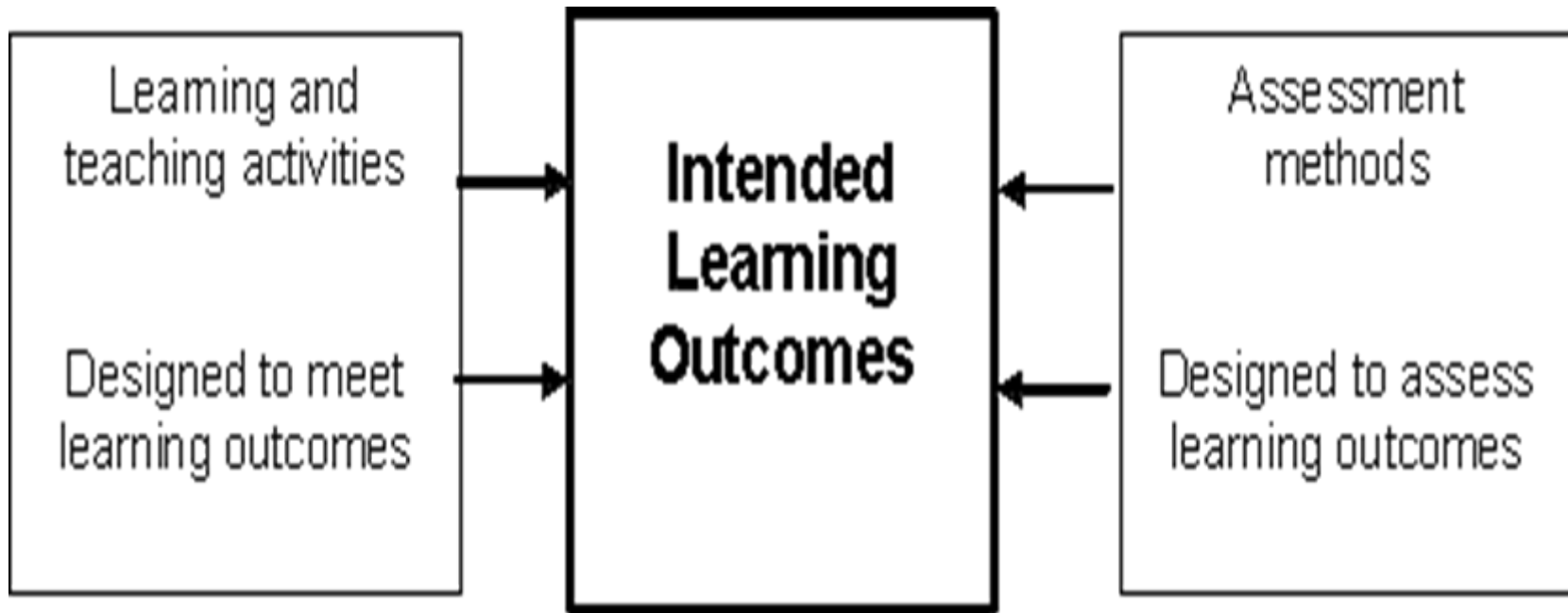
Research

'08	'07	
1	(1)	Harvard
2	(2)	Stanford
3	(3)	Univ California – Berkeley
4	(4)	Cambridge
5	(5)	MIT
6	(6)	California Inst Tech
7	(7)	Columbia
8	(8)	Princeton
9	(9)	Univ of Chicago
10	(10)	Oxford

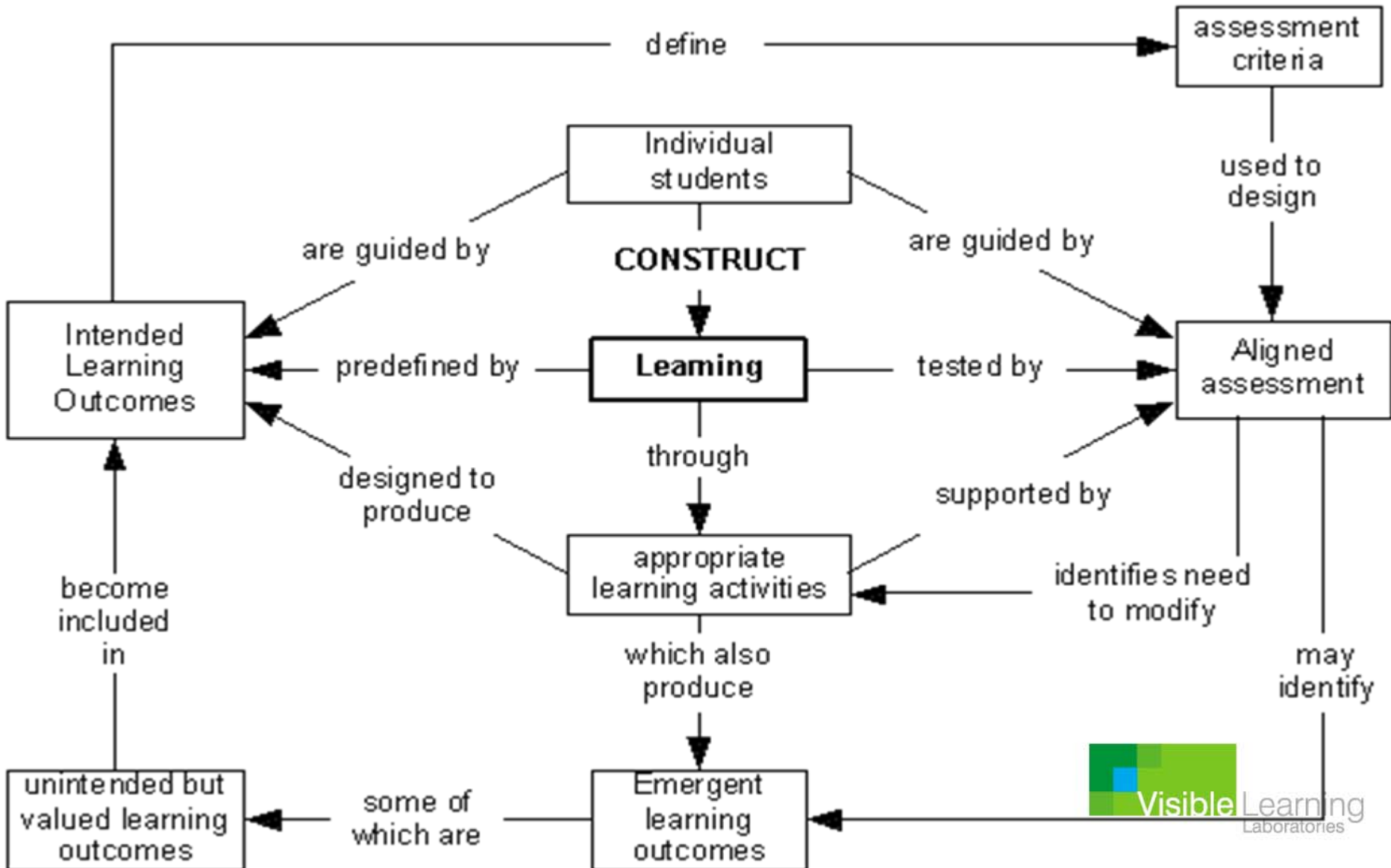
Research + Teaching

	University
1	Princeton
2.	Cal Inst Tech
3	Harvard
4	Swarthmore College
5	Williams College
6	US Military Academy
7	Amherst College
8	Wellesley College
9	Yale
10	Columbia

2 Constructive Alignment



John Bigg's model



3. What works best?

VISIBLE LEARNING: A SYNTHESIS OF OVER 800 META-ANALYSES IN EDUCATION

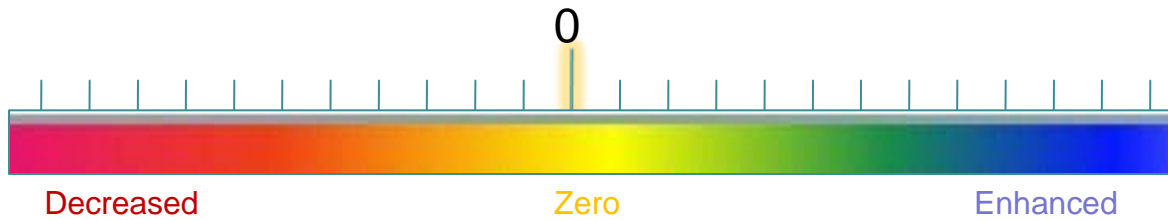
800 + meta-analyses

50,000 studies

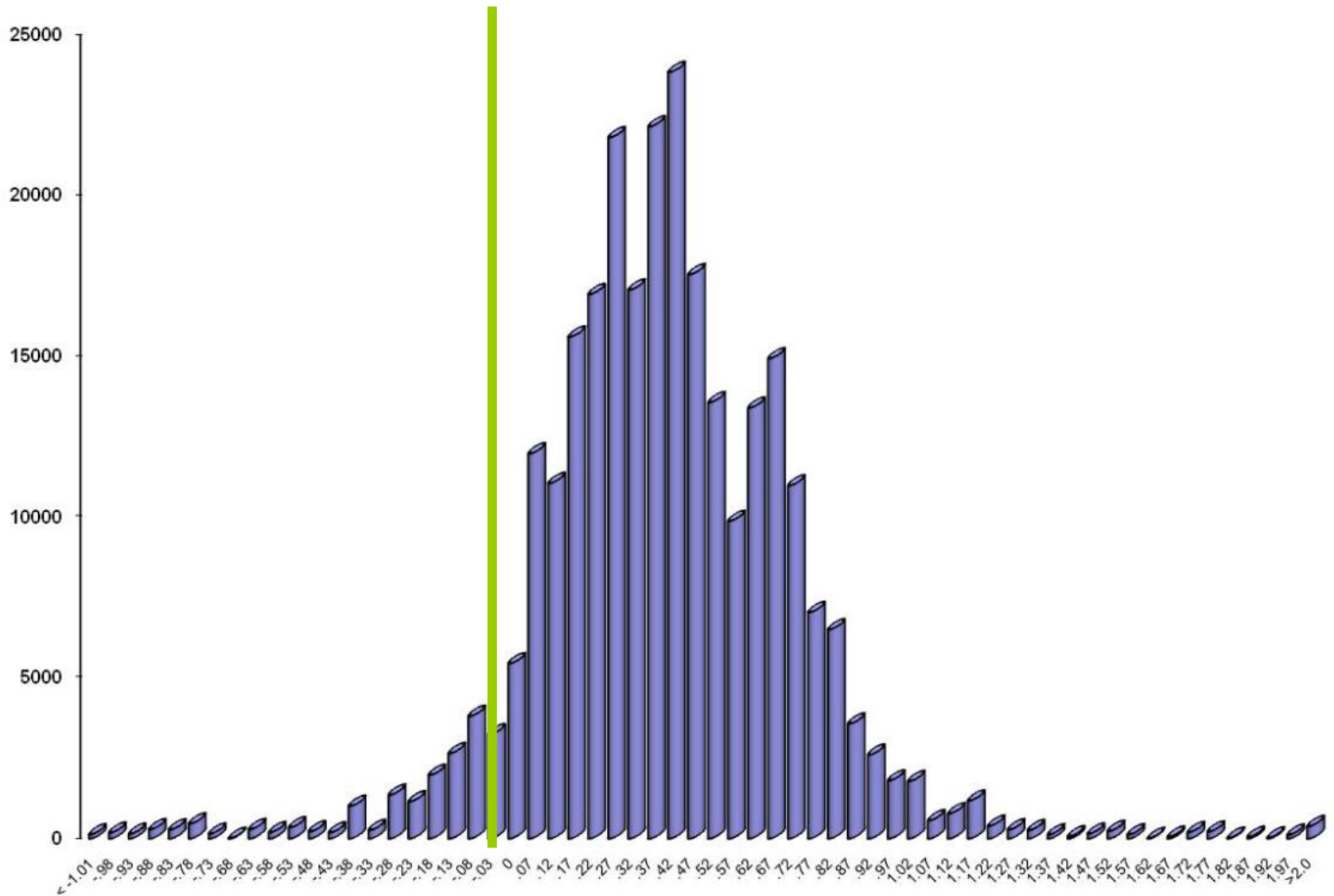
240m students



Influences on Achievement ?



Distribution of effects



Major conclusions

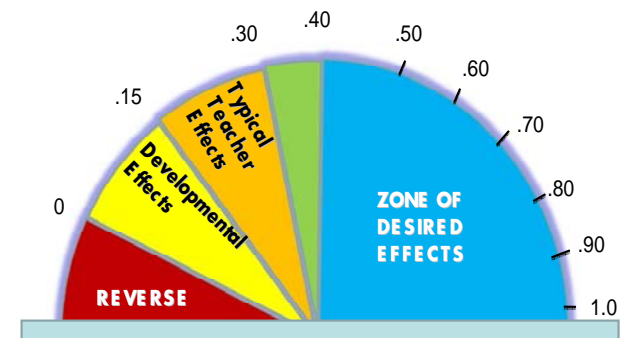
Almost everything works

Setting the bar at zero is absurd

Set the bar at $d = .40$

What works in schools, also works in Universities

Influences on Achievement



The bottom third

<i>Rank</i>	<i>Influence</i>	<i>ES</i>
70	<i>Time on Task</i>	.38
71	<i>Computer assisted instruction</i>	.37
79	<i>Frequent/ Effects of testing</i>	.34
103	<i>Teaching test taking</i>	.22
104	<i>Visual/Audio-visual methods</i>	.22
106	<i>Class size</i>	.21
111	<i>Co-/ Team teaching</i>	.19
112	<i>Web based learning</i>	.18
120	<i>Mentoring</i>	.15
122	<i>Gender</i>	.12
126	<i>Distance Education</i>	.09
130	<i>College halls of residence</i>	.05

<i>Rank</i>	<i>Influence</i>	<i>ES</i>
24	<i>Cooperative vs. individualistic learning</i>	.59
25	<i>Study skills</i>	.59
29	<i>Mastery learning</i>	.58
30	<i>Worked examples</i>	.57
34	<i>Goals - difficulty</i>	.56
36	<i>Peer tutoring</i>	.55
37	<i>Cooperative vs. competitive learning</i>	.54
48	<i>Small group learning</i>	.49
49	<i>Concentration/Persistence/ Engagement</i>	.48
56	<i>Quality of Teaching</i>	.44
63	<i>Cooperative learning</i>	.41

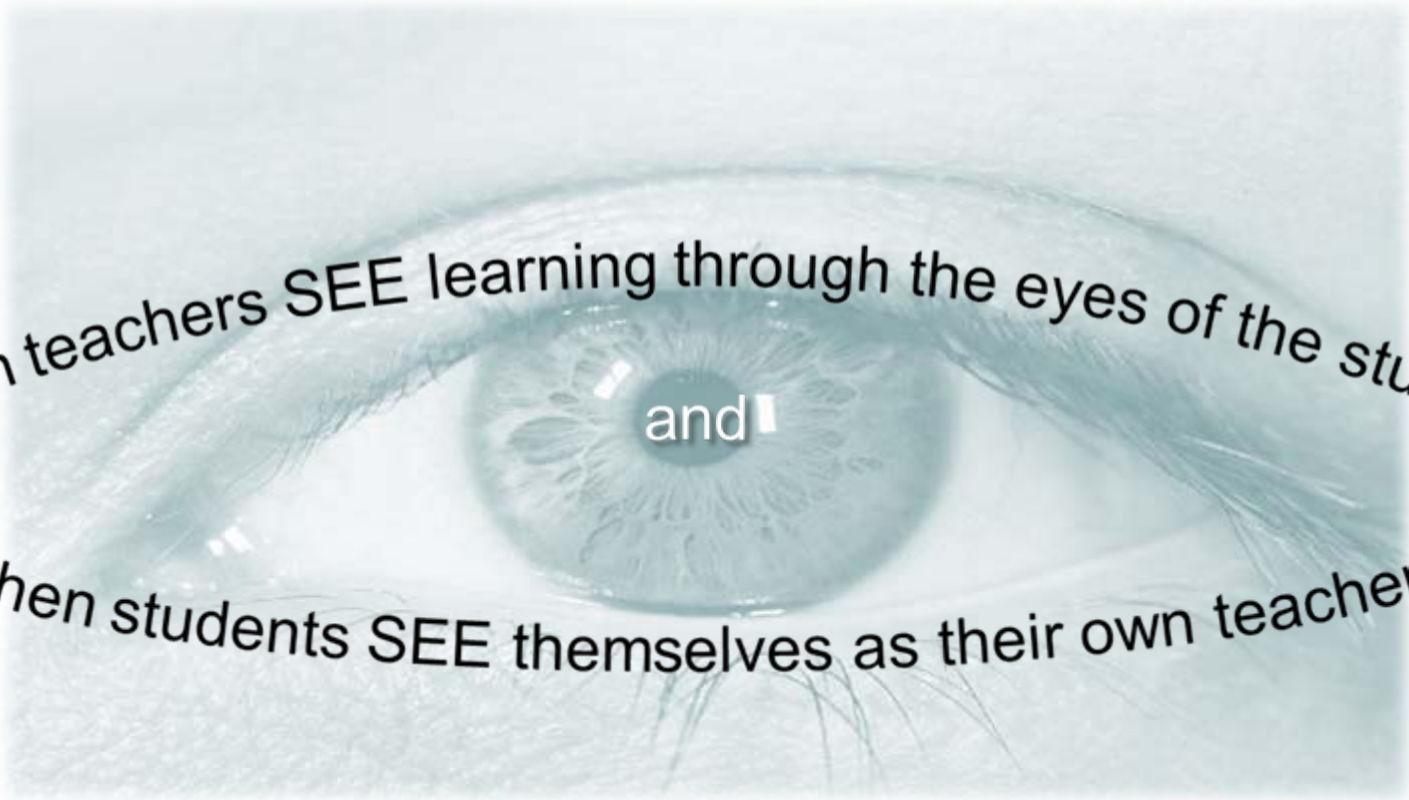
The TOP third

<i>Rank</i>	<i>Influence</i>	<i>ES</i>
1	<i>Self-report grades</i>	1.44
3	<i>Providing formative evaluation to lecturers</i>	.90
8	<i>Teacher clarity</i>	.75
9	<i>Reciprocal teaching</i>	.74
10	<i>Feedback</i>	.73
12	<i>Spaced vs. Mass Practice</i>	.71
13	<i>Meta-cognitive strategies</i>	.69
17	<i>Creativity Programs</i>	.65
18	<i>Self-verbalization/Self-questioning</i>	.64
19	<i>Professional development</i>	.62
20	<i>Problem solving teaching</i>	.61

Visible teaching & Visible learning

- **What some lecturers do!**
 - **In active, calculated and meaningful ways**
 - **Providing multiple opportunities & alternatives**
 - **Teaching learning strategies**
 - **Around surface and deep learning**
 - **That leads to students constructing learning**

Visible Teaching – Visible Learning

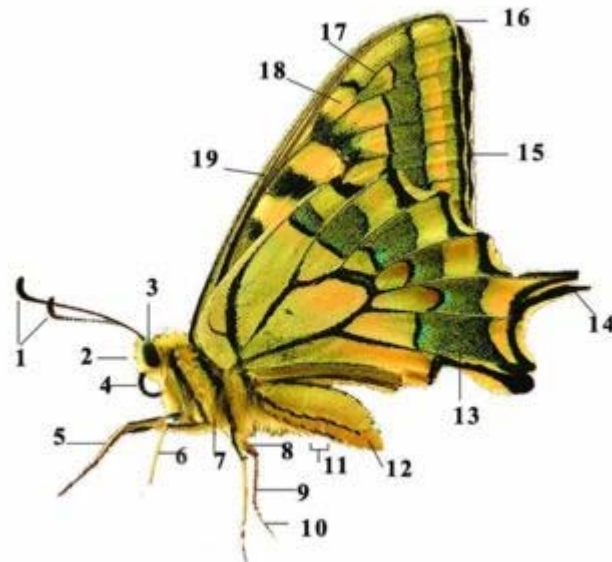


When teachers SEE learning through the eyes of the student

and

When students SEE themselves as their own teachers

4. Assessment for learning/ Feedback from assessment



- **Feedback is information provided by an agent (e.g., teacher, peer, book, parent, self/experience) regarding aspects of one's performance or understanding.**

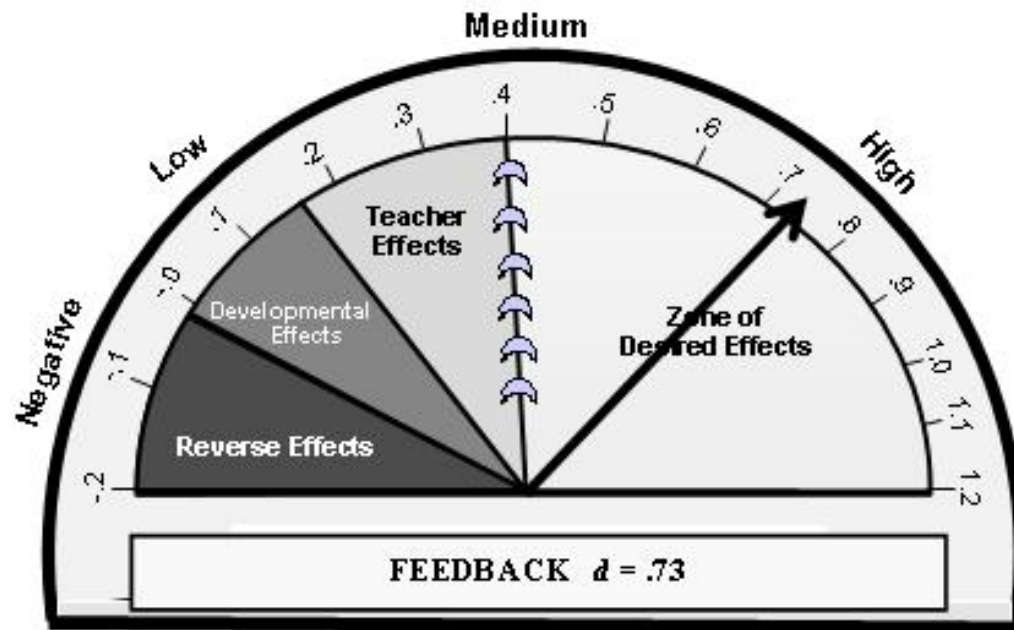


Feedback is evidence about:

- Where am I going?
- How am I going?
- Where to next?



The power of Feedback



KEY	
Standard error	.061 (Medium)
Rank	10 th
Number of Meta-analyses	23
Number of Studies	1,287
Number of Effects	2,050
Number of People (10)	67,931

Is it?

- feedback as something *teachers provide to students*



Is it?

- feedback as something *teachers provide to students*

NO NO NO NO –



IT IS ...

- feedback is most powerful when it is from the *student to the teacher*

Feedback to teachers helps make learning visible

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**

—then teaching and learning can be synchronized and
powerful

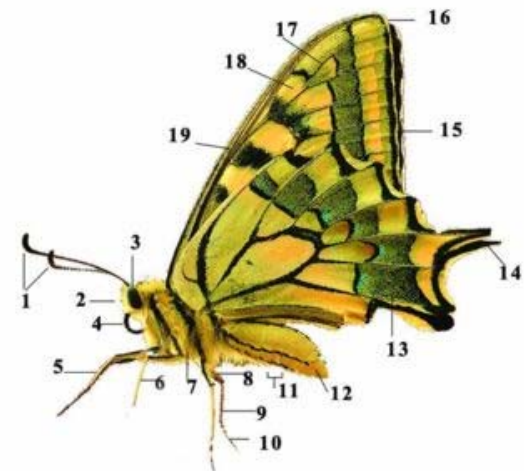
The key to feedback

- **is when feedback that is received and acted upon by students**
- many teachers claim they provide ample amounts of feedback but the issue is whether students receive and interpret the information in the feedback (Carless, 2006)
- At best, each student receives moments of feedback in a single day -- and not much from too many assignments
- Most feedback comes from peers, *and ...*



Feedback *from* assessment

- The role of scoring rubrics
 - Learning intentions and success criteria
- The beginning of computer based essay scoring
- The use of peer critique
- The power of peer assessment
- The use of peer collaboration
- Assessment *for* learning as well as *of*, and *as* learning
- Multiple opportunities + spaced practice



5 Assessment to get into University

Prior meta-analyses



<u>Author</u>	<u>Year</u>	<u>Studies</u>	<u>r</u>
Goldberg & Alliger	1992	10	.15
Morrison & Morrison	1995	22	.22-.28
Kuncel, Hezlett, & Ones	2001	1753	.13-.38
<i>Overall</i>			.20-.35

The two systems

NCEA

- no. credits (quantity)
- GPA (E=4, M=3, A=2, NA=0)

University approved only



Cambridge

- cumulative weighted score



Cambridge



- **CIE and GPA** **$r = .30$**

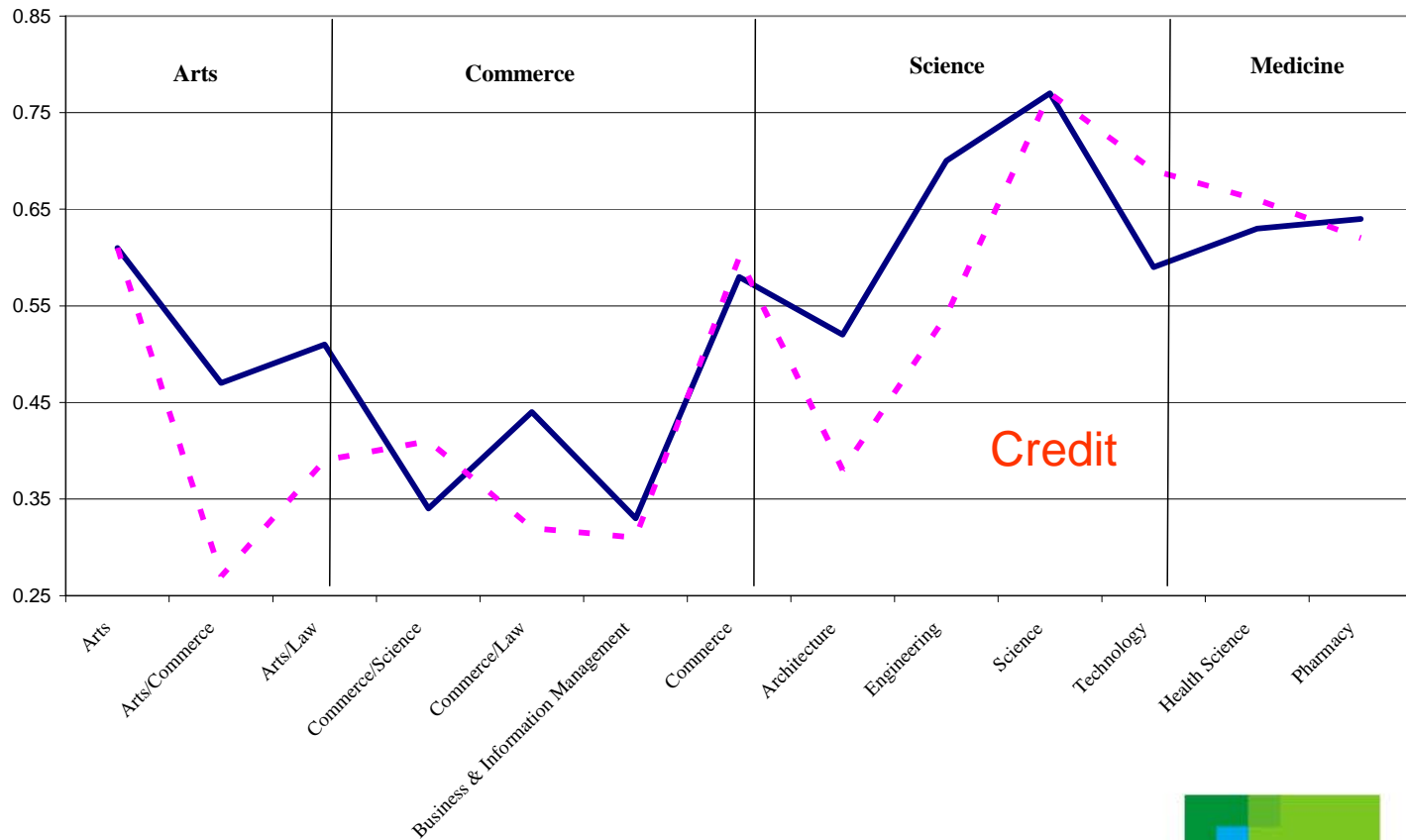
Correlations with 1st year GPA ...

- **Cambridge** **.30**
- **Credit-based NCEA model with University GPA** **.52**
- **GPA NCEA and University GPA** **.66**



Thus, NCEA is 4.8 times ($.66^2/.30^2$) more effective than CIE

Across Degrees



Let's re-work the black box ...

- NCEA mimics 1st year = ongoing assessments involving
 - a variety of tasks throughout the year
 - an increasing higher level of independence in producing projects or assessment tasks,
 - together with a final examination
- Cambridge typical of summative high school tests
- Bring on assessment *for* learning
 - Feedback *from* assessment

I WANT YOU



FOR FEEDBACK!

The black box of tertiary assessment

Thank you ...

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www.visiblelearning.co.nz



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