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It’s the DATA that counts!
What is our task?

To make a BETTER WORLD

Who else ...if not educators....

....who deliver, to every child,

15,000 hours of compulsory treatment?
Academia....

THE STANDARD MODEL of EDUCATIONAL RESEARCH

University

Data analysis

SCHOOLS

DATA

publications

ONE reader on average !!
THE official modes of school accountability

**DfES** department for Education and Skills, with a staff of thousands (?) + **Ofsted** inspection

**QCA**

**EXAMS**
- 18 years
- 16, 14, 11, 7, and 5 years

**DATA**
- Publications
- Data analysis
- League tables
Short summary: Results of DfES mistakes:

1) % 5 A* - C grades as an indicator:
   **Unethical indicator;**
   **Led to concentration on D students**

E.g. One student to another:
   “Do you want help?
   Tell her you are a C/D borderline”
2) Incorrect value added calculations: *Ignoring subject difficulties!* - This enhances the League Table position of schools that put students in for examinations in easy subjects and mislabels as ‘below average’ schools with strong maths, science, and Foreign Languages.

Net effect: decreased in enrolments in maths, science and FL. - - a national crisis. ‘melt down’.
Subject difficulties

Our conclusions, based on 1993 data from ALIS were confirmed by Dearing report using three years’ 1993, 1994 and 1995 of the entire national data for England, held by the DfEE: Sir Ron Dearing’s .. Review of Qualifications for 16-19 Year Olds 1995 annex

- “Replication of the Fitz-Gibbon and Vincent work shows that, broadly speaking, the general pattern of variation across subjects reported by these authors is confirmed by the national data” (p.4)
- “The findings of Fitz-Gibbon and Vincent that, among both boys and girls taking 3 A levels, those who had attained a higher average GCSE score tended to opt for science subjects, are confirmed.
- “Fitz-Gibbon and Vincent also reported that higher .. scores were obtained by students taking mathematics and science A levels. The national data confirm this.”

[The report, available from SCAA/QCA publications 0181 867 3299:
The DfES thinks these are all one line!!
REGRESSION SEGMENTS CAN ALSO SHOW TRENDS OVER TIME

A-level Mathematics - Applied

Grade inflation

UCAS points

ITDA score

1999
1998
1997
1996
1995
DfES mistakes (continued):

3) League Tables:

- Exclusions went up 600%.
- School is the wrong unit of analysis.
- If anything is reported it should be the Value Added in each Curriculum area.
- ‘failing schools’ = re-opened... but with which students... e.g Blakelaw school in Newcastle
THE SCHOOL IS THE WRONG UNIT OF ANALYSIS

Using a model that recognised the three level hierarchy of pupils taught within classes within schools suggested most of the variation was at the class level for Mathematics but not for English.

Table 17  Proportion of variance at each level: Mathematics

<table>
<thead>
<tr>
<th>Level</th>
<th>proportion of variance ‘accounted for’</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>15%</td>
</tr>
<tr>
<td>Class</td>
<td>43%</td>
</tr>
<tr>
<td>Pupil</td>
<td>42%</td>
</tr>
</tbody>
</table>

Table 18  Proportion of variance at each level: English

<table>
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<tr>
<th>Level</th>
<th>proportion of variance ‘accounted for’</th>
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</thead>
<tbody>
<tr>
<td>School</td>
<td>12%</td>
</tr>
<tr>
<td>Class</td>
<td>34%</td>
</tr>
<tr>
<td>Pupil</td>
<td>54%</td>
</tr>
</tbody>
</table>

Classroom effect nearly **three times** as large as the school effect
"The CEM Centre….. in addition to student achievement scores, also compares the attitudes and aspirations of students with those of students in similar schools, as well as the nature of the teaching process.

There are NO similar schools...

Too complex a profile.. The school is the wrong unit of analysis.... Classrooms account for about 3 times as much variation as schools

*From the Netherlands  (Visccher)
‘LEAGUE TABLES’, ‘best schools’…etc

‘League tables are a cancer on the body of education….. ... bringing in a huge amount of bad practice.

They put pressure on schools to enter good pupils for an unnecessary number of exams.

That’s not education - that’s cramming.’

Martin Stephen, High Master of Manchester Grammar School, which came top of the GCSE (age 16) league tables.
DfES mistakes (continued):

4) Failure to ensure fair examinations - e.g. the A-level scandal,

- names on papers,
- schools’ names too,
- papers marked by known examiners,
- all from one school together... etc.

Prejudice must be made impossible - as we recommended to QCA

5) Initiatives: *Haven’t worked!*
DISTRIBUTED RESEARCH

Confidential, Measurement-based Self-evaluation

the CEM CENTRE MODEL

Monitoring with feedback

Largest educational research group in any UK university

Independent! Can speak truth to power

University

DATA

Data analysis

SCHOOLS
GCSE band..... = A

Chances graphs - Advanced level Chemistry 1996
“value added” = relative progress

= [examination result] minus [average for similar students]

**Final Result** based on prior achievement

**HISTORY 1995 - 2000**

Statistical Process Control (SPC) Chart
“value added” = relative progress

= [examination result] minus [average for similar students]

based on a BASELINE (aptitude) test

HISTORY 1995 - 2000

Statistical Process Control (SPC) Chart
Value Added National Project -
our 2 year project with the government, SCAA 1995 - 1997

Chapter 6 “Wider issues”:
reported problems arising from publication

Can be downloaded from website www.cem.dur.ac.uk

Principals had commented on all but one of the negative effects of official published performance indicators
The Office for Standards in Education

£195 million pa

pre-announced visits by teams every 4 to 6 years

SCHOOLS
An OFSTED signpost

Amateurish, cobbled together INACCURATE !!!

Oh come on! Is that fair?
Comparing schools on VALUE ADDED

BLUE LINES SHOW UPPER AND LOWER Q’iles

Find the ‘failing schools’  All were labeled ‘failing’! Ignorance!
My own experience of inspectors, at age 13

That’s funny, we’re having yesterday’s maths. lesson again
Deeply annoyed inspector

“We’d have asked pupils and found that out!”
WELL..... What would a 13 year old have said
- torn between loyalty and honesty?

Anyway...

Half the class
didn’t know

it was yesterday’s lesson.
DEMING: “Drive out fear”

• “Those working in fear try to withdraw from the attention of those of whom they are afraid.”
STANDARDS have NOT risen - except in primary school numeracy....
CONFERENCE:
At least 60 university departments of Maths. Physics and Engineering .......

Unanimous......
‘...strong evidence...of a steady decline over the past decade of fluency in basic skills...and ..level of preparation’

* 10Maltravers St. LONDON WC2R 3ER
From Engineering Council report: Data of Professor J. Mathew Dept of Physics University of York
School reforms force out teachers

The number of teachers leaving schools has nearly doubled since Tony Blair began his crusade on education
“Workload, the pressure of government reforms and feelings of helplessness over pupil indiscipline all contribute to the rise....
Since standards have NOT risen in an area of GREAT CENTRAL CONTROL
--- we need to stop and think…..

WHY ARE WE SO INCOMPETENT?
CEM Centre AWARDS

-- David Blunkett

- For the *most* initiatives
- based on the *least* evidence
A decade of ‘driving up standards’
HASN’T WORKED!
except for primary school numeracy

...BUT we are top of one
League Table in Europe

Teenage drunkenness and violence
Martin Sixsmith TV programme on spinning

“No 10's special advisers (are) amateurish and a hindrance to good government.”

quoting Sir Alistair Morton, head of the Channel Tunnel project and strategic planning for Britain's railways
ONE TASK

ONE METHOD...
SCIENCE = the method

Evidence rather than authority

Stringent criteria for the quality of evidence

Quantification: - a sense of magnitude

Problem solving rather than blaming

Wide dissemination

of high-quality information

SCIENCE = A SYSTEM THAT WORKS
Values needed also.....

• The removal of unnecessary pain

Karl Popper

UPDATE:
Select committee of House of Commons has called for
“stringent external evaluation of the soundness of Ofsted’s methods..”
Two kinds of data

INDICATORS

EPIDEMIOLOGY

What’s happening?

Experiments

CLINICAL TRIALS

What works?
Official, government monitoring ......  
Conflict of interest  ->  more grade inflation  - -see TES  
gaming…curriculum distortion 
(even exclusions, cheating…) 
“Wherever there is fear, we get the wrong figures”  
W.Edwards Deming

VS

Professional systems (e.g. from the CEM Centre)

Creates a “RESEARCH ETHOS”
contact with reality, good science
problem surfacing >>>> problem solving
Very important test...

OR

Have fun!

Evidence-based

ie: experiments

testing 7

Year olds

Teacher Doing an MA

It's Gold's

WHO DID BEST?

EQUIVALENT GROUPS
But personal experience is sometimes enough

i.e. Not every problem requires an experiment. An example, from teaching:

“I haven’t got a pencil....”
Evidence-based: YELLIS UNDER-ASPIRERS’ EXPERIMENT 1999 - results

Effect Size = -0.4

ie value added was better if under-aspiring student was not reported to the school

<table>
<thead>
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<th>Average Residual</th>
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<tbody>
<tr>
<td></td>
<td>N</td>
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<tr>
<td>NOT named</td>
<td>59</td>
</tr>
<tr>
<td>named</td>
<td>61</td>
</tr>
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</table>
A WARNING TO US ALL....

There are many examples of good intentions resulting in bad outcomes.
And how do we create a civil society?
“REFORMS AS EXPERIMENTS”

• How about competition to deliver among the various providers....?
• E.g JARVIS
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It’s the DATA that counts!
Those who do the job know the job and are best able to improve the job

Principals and teachers…and the CEM Centre is a research arm — here to help
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<td>cross-age tutoring</td>
<td>Cohen, Kulik &amp; Kulik,</td>
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<td>cross-age tutoring</td>
<td>Fitz-Gibbon 1975</td>
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<td>0.4</td>
<td>cross-age tutoring</td>
<td>Wang, Haertel &amp; Walberg, 1993</td>
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<td>0.8</td>
<td>cross-age tutoring</td>
<td>Levin et al, 1985.</td>
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<td>-0.5</td>
<td>computer assisted ILS</td>
<td>Wood For BECTa</td>
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<td>0.2</td>
<td>computer assisted instruction</td>
<td>Levin et al, 1985.</td>
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<td>0.1</td>
<td>reduced class size</td>
<td>Levin et al, 1985.</td>
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<td>reduced class size</td>
<td>TENNESSEE</td>
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<td>0.03</td>
<td>more time/back to basics</td>
<td>Levin et al, 1985.</td>
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<td>0.2</td>
<td>Primary schools numeracy project</td>
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SCHOOLS.....

Places which young people go to in order to watch older people work

STUDENTS are your second best resource
Room design for cross-age tutoring

List of things to teach

Stops eye contact

If tutor is right-handed then tutee sits on left
ATTITUDES

• Enjoyment

• Empathy

• Shyness overcome

• Group-think reduced

• Self-esteem, sense of efficacy increased
ACHIEVEMENT

• Tutors learn by teaching

• Tutees learn from a personal tutor

• Teachers are freed to diagnose and prescribe
BEHAVIOURS

- Discipline a doddle
- Attendance improved
- Hard work - - - time on task
For the things we have to learn before we can do them, we learn by doing them: men become builders by building and lyre players by playing the lyre; so too we become just by doing just acts, temperate by doing temperate acts, brave by doing brave acts.

Herbert Read quoting Aristotle

Catch them being good

Practice makes perfect

'Forced compliance' in psychology
Children and young people
SHOULD
ENJOY
school

It is their life....
For some, their only life...

And teachers, too, should enjoy!
STRESS KILLS
BE WISE

One task…. To make a better world

One method: the slow, careful, dispersed (not centrally controlled), democratic EFFECTIVE methods of science…
BE WISE

Please....
For teenagers like Mauree
and for all our grandchildren
Curriculum, Evaluation and Management Centre

University of Durham

Carol.Fitz-Gibbon@cem.dur.ac.uk

Web site
http://cem.dur.ac.uk/

MEASURE WHAT MATTERS
THANK YOU for being here....