Bloom, Katy ORCID logoORCID: https://orcid.org/0000-0002-4907-425X (2015) From Good to Outstanding: Pedagogical Excellence. In: The Association of Science Education Annual International Conference, 7-10/1/15, Reading University. (Unpublished)

Downloaded from: https://ray.yorksj.ac.uk/id/eprint/5968/

Research at York St John (RaY) is an institutional repository. It supports the principles of open access by making the research outputs of the University available in digital form. Copyright of the items stored in RaY reside with the authors and/or other copyright owners. Users may access full text items free of charge, and may download a copy for private study or non-commercial research. For further reuse terms, see licence terms governing individual outputs. Institutional Repository Policy Statement

# RaY

Research at the University of York St John For more information please contact RaY at <u>ray@yorksj.ac.uk</u>

# From Good to Outstanding

Katy Bloom Science Lead Tutor Associate Principal Lecturer, Leeds Trinity University

Scien

Science

STEM Learning Limited

# Intended Learning Outcomes

#### By the end of the session you will:

- · decide on your own definition of outstanding and what it means for your teaching team;
- · engage with the evidence-base of 'what works' to learn what the 'literature' says is outstanding;
- · reflect on the implications this will have for their own classroom practice, and make targets for future action.



Research e.g., http://educationendowmentfoundation.org.uk/toolkit

#### Teachers

Ofsted

What is the individual's notion of outstanding?

#### Students

"when you were learning well, what was I doing?"





# Think-Pair-Share

What key features do great lessons have?

1. Pupils must see the value of learning for themselves

- 2. Pupils should have self-belief and self-esteem
- 3. Pupils should reach for challenging goals
- 4. Pupils need feedback and dialogue
- 5. Pupils need their learning to be structured
- 6. Pupils need time to practise

7. Pupils need to learn skills as well as content

from Geoff Petty, ch14 Evidence Based Teaching 2<sup>nd</sup> ed.



Visible Learning – A synthesis of over 800 meta-analyses relating to achievement John Hattie 2009 scien







#### In general:

0.1 normal annual maturation, no teaching

- 0.25 average effect of a teacher, regardless of quality
- 0.42 average effect of all interventions
- 0.5 minimum standard for a new intervention
- 0.8 significant effects

1.0 improving the rate of learning by 50%, advancing the learners' achievement by 1 year, a two-grade leap

#### What does it tell us?

- From this we can conclude that an effect size of 0.5 is equivalent to the difference between two adjacent grades at GCSE.
- There are thousands of pieces of research within these studies, making them extremely authoritative.
- It also shows that methods that work the best do so in every educational phase and across the ability range.

Science





#### Rank these 10 effects:

- Concept mapping
- · Acceleration of gifted students
- Teacher subject matter knowledge
- · Phonics instruction
- Homework
- · Teacher credibility
- Class size
- Metacognitive Strategies
- Small group learning Feedback



Sc

Science

(from 1 = lowest effect to 10 = highest effect)

#### Sounds too good to be true...

#### Cons:

- Comparing/combining apples and pears? .
- Meta-analysis seeks 'big facts' and does not seek to explain complexities (classrooms are places where complexities abound)
- · Based on past studies
- May involve the use of low quality studies (generally though, the effects are not compromised by the quality of the study) •
- The Hawthorne effect comes into play . It assumes that all learners are the same and have the same needs
- It ignores context what works well in one place might not work well in another
- . They do not tell us why these methods work

# Good teachers...

The greatest sources of variance within our system relate to teachers (Hattie, 2003).

Some teach in a deliberate and visible manner. When they see learning occurring (or not):

· they intervene in meaningful ways

- · they alter the direction of learning
- they make sure the goal is shared, specific and challenging
- they provide students with multiple opportunities and alternatives for developing learning strategies.

### What do expert teachers do?

Research identified 5 major dimensions of 'expert' teachers, comprising 16 attributes:

- Identify essential representations of their subject
- Guide learning through classroom interactions
   Monitor learning and provide feedback
- Attend to affective attributes
- Influence student outcomes

Within these, Challenge, Deep Representation and Monitoring & Feedback accounted for 80%, and most critically in the depth of processing that the students of exper teachers attain.

from Hattie, J (2003) Teachers Make a Difference: What is the research science?









# **Demystifying Differentiation**

In the UK, we often talk about differentiation in terms of:

- Task
- Support
- Outcome

have learned.

In the USA, authors such as C.A. Tomlinson use the terms:

- Content input, what the students learn
  Process how the students go about making sense of
- ideas and information
   Product output, how the students demonstrate what they

Science









#### Over to you...

For these lessons on 'rocks' or 'bonding', the students are being asked to manage their differentiation to quite a high degree.

There is a 'menu' from which to choose a starting point . This gives more control of the pace and the direction of their learning.

Some teachers fear that showing a minimum option will mean that their students will take it. Often however, and peer pressure aside, they are keen to go for the maximum.

Choose a starting point, and go through the range of activities.

Science







Learning "The way	<b>g Through</b>   y we learn change	Four Stages o s as we get better at w	<b>f <u>Mastery</u></b> hat we do."
Novice - New to Job; Knows Little or Nothing	Competent • Can Perform to Basic Standards	Can Vary Performance Based on Unique Situations	Master/Expert     Can Invent New, Better Ways     to do Job; Can Teach Others
Ir	creasing Fluency, I	earning Agility and Sha	areable Knowledge
Needs Common Learning Nee	ds/Performance Requirement	s Unique Learning Needs,	/Performance Requirements
Formal- Informal			
More Formal, Structure	ed Training	More Informal, Social, W	Vorkplace-Centered Learning
Structure			
Common Curricula (Pro	gram Driven)	Personalized	Learning (Performer Driven)
Annroachas			
Approaches	i		
Training, E-Learning, Bier	lineu cearning, simulation, Coac	ining, some, Performance Support, Info	Collaboration
Primary Strategy: Education & Training (Classroom and Online)	Primary Strategy: Practice, Coaching "Help Me Do It Better"	Primary Strategy: Access to Knowledge & Performance Resources	Primary Strategy: Collaboration & Problem Solving

A GOOD ACTIVITY is something students will make or do

- using an essential skill(s) and essential information
- in order to understand an essential idea/principle or answer an essential question.

#### A GOOD DIFFERENTIATED ACTIVITY is something

students will make or do

- · In a range of modes at varied degrees of sophistication in varying time spans
- · With varied amounts of teacher or peer support (scaffolding)
- · using an essential skill(s) and essential information
- · in order to understand an essential idea/principle or answer an essential question. Scienc ed-ability classroom 2001.

0

CA Tomlinson, How to differentiate instruction in a mix





