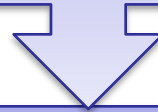


Research-informed policy to support public engagement with science online

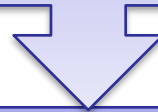
Jim Ryder

School of Education
University of Leeds, UK

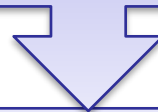
The meaning of **scientific literacy** and identifying this as curriculum goal in schools (review in Studies in Science Education)



Designing and evaluating **teaching/learning about the nature of science** in school settings (Nuffield-funded curriculum development study)



Recognising the **role of teachers** in school curriculum reform enactment more broadly (ESRC-Gatsby EISER study)



The frame of **policy**; a sociocultural perspective on teachers' engagement with policy reforms (upcoming symposium at ESERA 2017 in Dublin)

Outline

1. What is policy?
2. The field of policy studies; researching policy
3. Policy in the context of public engagement with science (online).
4. Policy *research* in the context of public engagement with science (online)

What is 'policy'?

'the authoritative allocation of values'

Kogan (1975)

KOGAN, M. 1975. *Educational policy-making: A study of interest groups and parliament*, London, George Allen and Unwin.

Policy as an authoritative identification and allocation of the following across a field:

- attention (what gets noticed, and by whom, agenda setting);
- goals (what are we trying to do);
- resources, e.g. funding, organisations set up/sustained (and who is able to do it);
- values (what is important);

...and how these play out in practice amongst multiple stakeholders over time.

COLEBATCH, H. K. 2009. *Policy*, Maidenhead, Open University Press.

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Policy: a typical analytical frame

Attention: What gets noticed	
Multiple stakeholders	
Resources	
Goals	
Values	

The Enactment and Impact of Science Education Reform (EISER)

Indira Banner, Jim Donnelly, Matt Homer, Helen Morris, Jim Ryder

Ryder, J., & Banner, I. (2013). School Teachers' Experiences of Science Curriculum Reform. *International Journal of Science Education*, 35(3), 490–514.

Ryder, J. (2015). Being professional: Accountability and authority in teachers' responses to science curriculum reform. *Studies in Science Education*, 51, 87-120.



EISER: Multiple Stakeholders in Education Policy

Different stakeholders in science education :

- encouraging students to choose science courses at university (professional scientists and engineers);
- developing students' ability to think and act creatively to solve problems (employers);
- develop an interest in, even a passion for, science as a subject (scientists, science teachers);
- attaining good grades in high-stakes attainment tests (politicians, students, parents).

(cf. Fensham, 2009)

Curriculum reform as policy enactment: a sociocultural perspective



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External Contexts

Awarding
bodies

Schools
Inspectorate

Universities

National
curriculum in
science

National, public
accountability
mechanisms:
league tables

Internal Contexts

School mission,
ethos

Social networks
in school

Local school
curriculum policies

Student
aspirations

Personal Contexts

Teacher
biography

Teacher
identity

Teaching
goals

Teacher
knowledge
and skills

HOW SCHOOLS DO POLICY

POLICY ENACTMENTS IN
SECONDARY SCHOOLS



STEPHEN J. BALL,
MEG MAGUIRE
AND ANNETTE BRAUN



How Schools do Policy: Teachers as ‘policy actors’

Ball, Maguire & Braun (2012)

Narrators	interpretation, selection, enforcement of meanings
Entrepreneurs	advocacy, creativity, integration
Outsiders	entrepreneurship, partnership, monitoring
Transactors	accounting, reporting, monitoring/supporting, facilitating
Enthusiasts	investment, creativity, satisfaction, career
Translators	production of texts, artifacts, events
Critics	union representatives: monitoring of management, maintaining counter discourses
Receivers	coping, defending, dependency

Policy: A neglected area within science education research?

‘There is virtually no literature in science education on how research affects policy, how policy affects practice, or how the personal values of teachers, parents, administrators, and students are relevant to policy enactment or implementation’
([deBoer, 2011, p2](#)).

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‘Policies’ relevant to public engagement with science (online)

- Requiring scientists to engage with the public as part of science research funding (UK: the policy lever of ‘impact’)
- Large EU2020 funding calls focussed on links between school and non-school science engagement activities
- National assessment of school students’ engagement with science online in the context of socio-scientific issues (the policy lever of high-stakes assessment) - (notional?)
- A series of science ‘cafés’ held in a local community hub

Otley COURTHOUSE

an arts and resource centre for everyone



Thursday
22nd June
7.30pm

Otley Science Café 20/20

Three top science
speakers in one
evening.

All welcome:
scientists,
non-scientists,
interested young
people...

Fun quarterly 20/20 Science Café

Tickets £5 · 18s and under free · 01943 467466

Exercise and arthritis: a painful story or healthy relationship?
Immunity in a test tube; Engineering Biology for better health
Why Schrödinger's Cat is hard to understand:

The Physics of Quantum Information

Dr Antonios Stavropoulos-Kalinoglou - Carnegie School of Sport, Leeds Beckett University

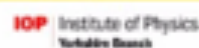
Dr Paul Ko Ferrigno - CEO metaLinear Ltd

Prof Ben Varcoe - School of Physics and Astronomy, University of Leeds



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The lens of policy studies: Otley Science Café

<p>Attention: What gets noticed</p>	<p>Immunity in a test tube; engineering Biology for better health Why Schrödinger’s Cat Is Hard to Understand: The Physics of Quantum Information Exercise and arthritis: a painful story or healthy relationship?</p>
<p>Multiple stakeholders</p>	<p>CEO local company, local university academics Local public: parents, children... Institute of Physics, Otley town council</p>
<p>Resources</p>	<p>Community hub Tickets are £5, but free for people 18 years old and under</p>
<p>Goals</p>	<p>Hitting targets for audience numbers ‘Ticking the box’ of public engagement (university scientist) Parent(s) shaping children into future scientists?</p>
<p>Values</p>	<p>civic values of local universities promoting science? intellectual interest and wonderment, community</p>

What does 'online' bring to the table...?

- blogs
- social media channels – Twitter, Facebook
- multiple voices
- legacy media e.g. newspapers and associated trusted brands (BBC?, Guardian?) one voice amongst many
- immediate and accessible 'trip advisor'-style evaluation through online social media networks
- online activities alongside more traditional means on communication (e.g. Otley Science Café)

What does 'online' bring to the table...?

Attention: What gets noticed	<ul style="list-style-type: none">• proliferation of themes• responsive to multiple voices – democratisation of agendas?• trending on social media
Multiple stakeholders	<ul style="list-style-type: none">• multiple stakeholder voices• online digitalisation brings globalisation?• broadening accessibility (if online-savvy)
Resources	<ul style="list-style-type: none">• cheap?• rapid and responsive
Goals	<ul style="list-style-type: none">• often hidden?
Values	<ul style="list-style-type: none">• valuing 'credibility'• the meanings of expert, mediator• valuing celebrity, personal stimulation, (non)-conformity

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ROUTLEDGE
ROUTLEDGE
INTERNATIONAL
HANDBOOKS



The Routledge Handbook of Public Communication of Science and Technology

Massimiano Bucchi and Brian Trench

Policy research in the context of PESO



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Attention: What gets noticed	<ul style="list-style-type: none">• the process of ‘trending’• short timescale studies of theme growth/decline• how is attention managed and by whom?
Multiple stakeholders	<ul style="list-style-type: none">• multiple voices, ‘crisis of mediators’, tracking stakeholder engagement over time• studying the ‘permeability and heterogeneity’ of social networks• evaluating (in)-accessibility across publics within online spaces

Policy research in the context of PESO



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Resources	<ul style="list-style-type: none">• formal schooling as an established resource to support PESO• social networks as a resource – studying their emergence, representation, lifetime• investing in, and researching the role of, mediators (i.e. as a resource)
Goals	<ul style="list-style-type: none">• developing and evaluating mechanisms for ‘surfacing’ goals around PESO• researching the goals of professional science organisations (and other stakeholders) in relation to PESO
Values	<ul style="list-style-type: none">• whose values?• exploring values empirically• developing and evaluating mechanisms for public assessment of trustworthiness of online sources

Research-informed policy to support public engagement with science online

