

Assessing Quality in Applied and Practice-based Educational Research

A Framework for Discussion



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'Where researchers in higher education have undertaken applied and practice-based research that they consider to have achieved due standards of excellence, they should be able to submit it to the RAE in the expectation that it will be assessed fairly, against appropriate criteria' RAE 2008

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1. Introduction



Over the last decade, there has been a growing interest in applied and practice-based research in education by governments and many other bodies. The Best Practice Research Scholarship Scheme, the Scottish Applied Educational Research Scheme, the Networked Learning Communities initiative supported by the National College for School Leadership, the Teaching and Learning Research Programme - these are perhaps some of the more high profile examples. There are many others as well and we have set some of these out in the Appendix.

However, as the Appendix makes clear, these initiatives vary widely in their ways of working, how they conceptualise the links between research, policy and practice, and, indeed, what they mean by the terms 'applied' or 'practice-based'. Perhaps as a

result of this variation, despite growing interest, to date there has been very little attempt to clarify precisely what applied and practice-based research are and how they differ from other types of educational research – if indeed they do. There has also been very little attempt to address the issue of quality in applied and practice-based research.

In Spring 2004, the ESRC commissioned researchers at the Oxford University Department of Educational Studies to undertake a short project to bring some conceptual clarity to different approaches to applied and practice-based research with a view to developing appropriate quality criteria for the academic, policy and user communities. The aims of the project were to:

- clarify the concepts employed in relation to applied and practice-based research;
- map the various models currently in use;
- explore the philosophical underpinnings of the different models;
- review the recent UK initiatives concerning applied research and practice-based research, and to

explore the drivers behind them;

and then to:

- develop an understanding of quality that could assist subsequent development of quality criteria appropriate for different types of applied and practice-based research.

2. Why do we need quality criteria and why now?



During the project our ways of working were threefold. Firstly, we undertook a *literature review* of standards and criteria in use or recommended in a wide range of documents; secondly, we undertook a set of *interviews* with a cross section of key individuals from the research and policy communities; and finally, we established a programme of *consultation*, discussing early drafts of our work at three different conferences and at a specially convened working day. This particular report presents a summary of our work; the arguments in this paper are more fully discussed in Oancea and Furlong (2005).

It is now almost a decade since David Hargreaves launched his critical commentary on the quality of educational research¹, criticisms that were later 'made official' by the Hillage Report² commissioned by the incoming Labour administration. Seven or eight years on, a perception of poor quality remains prevalent in government circles³. But one of the consequences of these criticisms has been a growing number of attempts to define what good quality is in educational research⁴, and it is these initiatives, together with reports and projects in other disciplines and from international sources, that have formed one important part of the review we have conducted during our study.

Within the UK, one of the most important definers of research quality has been and remains the RAE. The 2001 RAE stated that it supported the 'equal consideration' of basic, strategic and applied research and the consideration of

practical or practice-oriented research as a matter of principle⁵.

However, subsequently, two official government reports (the Roberts Report and the Lambert Report ⁶) implied that this had not in fact happened; they criticised the 2001 RAE for not recognising the importance of 'knowledge transfer' between universities and industry and for not encouraging innovative forms of collaborative university-led research.

Perhaps as a result of such criticisms, as we have seen in the opening quotation for this paper, the RAE 2008 now aspires to ensure that any researcher should be able to submit applied and practice-based research that they consider to have achieved 'due standards of excellence'.

RAE subject panels are therefore urged to

'define appropriate criteria for identifying excellence in different forms of research endeavour, while attaching no greater weight to one form over another; and (...) to make provision to recognise the diversity of evidence for excellent research'⁷.

What is clear is that the forthcoming RAE means that there is now a short term political imperative for the research community in the UK itself to address the issue of

quality in applied and practice-based research. But important though such pressure is, it is not the only reason for addressing the issue of quality; equally important is a longer-term debate about what some have called 'a new social contract' for research⁸.

3. A new social contract for research?



Traditionally it has been assumed that there is a clear distinction between the worlds of research and the worlds of policy and practice – that there are 'two communities'. On the one hand there is the world of research, based on explicit, systematic work aimed at the growth of theoretical knowledge. Practice and policy on the other hand are seen as taking place in the 'real world', a world based on different forms of knowledge – for example on tacit knowledge and on practical wisdom.

However, over the last 20 years there has been a growing recognition of the need for tighter links between research, practice and policy. There is increasing recognition of the

legitimacy of the policy-originated quest for answers, and the need for research to contribute to solutions; as a result, the idea of 'evidence-informed' policy and practice has rapidly gained support and is coming to shape research agendas throughout the country⁹.

At the same time, the contexts of knowledge production and use in society are diversifying¹⁰ and new models of research are being developed to respond to these challenges.

But despite the increased interest in research, there remains concern within the policy and practice communities about the apparent lack of accountability of researchers. For their part, researchers themselves are wary of what they see as a push towards a 'marketisation' of the research process, they emphasise the continuing need to contribute to 'pure', theoretical knowledge rather than merely to pragmatic concerns about 'what works'¹¹. In other words, a 'new social contract for research'¹² is under negotiation. It is in this context that we need to understand the increased interest in applied and practice-based research and need to consider issues of quality.

4. Defining 'applied' and 'practice-based' research



But what are applied and practice-based research? How can we characterise them in a way that will help us judge quality?

The OECD Frascati Manual defines applied research as:

*'original investigation undertaken in order to acquire new knowledge..., directed towards a specific practical aim or objective'*¹³.

They go on to suggest that applied research is undertaken either to determine possible uses for the findings of basic research or to determine new methods or ways of achieving a specific and predetermined objective.

While such a definition is a useful start, it is only descriptive of the basic aim of this type of research and gives us limited insight as to how we might address the issue of quality. At present there is no internationally accepted definition, even a descriptive

one, of 'practice-based' research.

What our review of the literature has shown is that defining applied and practice-based research with any precision is difficult because there are many competing views with only some areas of overlap between them. However, we can perhaps gain some insight by examining some of the many models that are currently being urged.

One model enjoying current popularity is Stokes' notion of 'Pasteur's quadrant'¹⁴. By cross-cutting the idea of 'use' with the pursuit of 'fundamental understanding', Stokes proposes a quadrant model that encompasses 'pure basic research', 'pure applied research' and then Pasteur's quadrant - 'use-inspired basic research'. This sort of research, he argues, should address genuine problems, identified by policy makers and practitioners; such research could then contribute both to knowledge production and to policy and practice.

Pasteur's Quadrant¹⁵

		Research is inspired by:	
		Considerations of Use?	
		No	Yes
Quest for Fundamental Understanding?	Yes	Pure Basic (Bohr)	Use-inspired Basic (Pasteur)
	No		Pure Applied (Edison)

These ideas have also been strongly urged in the field of education, most recently by the OECD in their review of educational research capacity in England¹⁶, and by the English National Educational Research Forum¹⁷.

However, despite its popularity, Stokes' 'resolution' of the distinctions between 'pure theoretical' research and 'pure applied' research is, we would argue, over simplistic. Somewhat like the OECD definition, it implies that the only difference between pure or applied research is its basic aim, thereby overlooking other important characteristics such as the level at which questions are pitched, the distance to application and the way autonomy and accountability between different partners are managed.

Some other dimensions of applied and practice-based research are captured in the notion of 'strategic' research¹⁸, that is research which aims to combine scientific understanding and practical advancement, but also highlights the political goal of achieving change. As well as addressing issues of public concern, strategic research is therefore seen as being highly focused, aiming at 'high-leverage' outcomes and being based on partnerships between scientists and practitioners¹⁹.

Yet other models of research that have attracted growing interest in the recent past²⁰ fundamentally challenge any simplistic distinction between 'pure', 'applied' and 'strategic' research. Action research²¹ and reflective practice²², for example, are models that offer arguments against the idea that applied research is only focused on use and that it does not and cannot contribute to more theoretical knowledge production while at the same time achieving changed practice.

Further complexity is brought into the picture once we start to unpick the differences between research which is academic-led and research which is practitioner-led or practice-based. In these models, research and practice are no longer conceived as isolated but as integrated activities that borrow from each other, inform each other and support each other. Gibbons et al's (1994) account of what they term 'Mode 2' knowledge production gives us an idea of what is involved here.

Gibbons et al describe 'Mode 2' as an emerging form of 'context-based knowledge production'. Knowledge is generated in the process of providing solutions to problems which have been identified on the ground, in the context of application. The process, they suggest, involves

transdisciplinarity, heterogeneity, flexibility, and permeability of institutional boundaries. There is also likely to be a greater emphasis on social accountability, representing 'a diverse range of intellectual interests, as well as other social, economical or political ones' (p. 8).

As a result, the idea of 'good science' or 'quality of research' is even more difficult to pin down. Apart from more traditional criteria like intellectual interest/solidity and cost-effectiveness, there are other dimensions that spring from the diversification of the interests invested in the research process, e.g., social acceptability, market competitiveness *etc.*

Quality is therefore '*determined by a wider set of criteria which reflects the broadening social composition of the review system*'²³; it becomes a composite, multidimensional concept.

What these different models highlight are the shifting meanings and boundaries of applied and practice-based research. While there may be great interest in them, there is an even greater disagreement as to how they should be defined and therefore how they might be assessed. Any quality standards for applied and practice-based research must therefore take into account the

multitude of forms and aims that they can serve.

For the purposes of this paper we have therefore adopted an inclusive definition, seeing applied and practice based research as **an area situated between academia-led**

theoretical pursuits (e.g. historical research) **and research-informed practice, and consisting of a multitude of models of research explicitly conducted in, with, and/or for practice.**



Academic-led theoretical pursuits (e.g. Historical research)

-----Applied and practice-based research

-----Research-informed practice

' Multiple models of research conducted in, with and/or for practice'

Applied and practice-based research - an inclusive definition

5. Assessing the quality – a multi-dimensional approach



What we have argued so far is that recent changes in the relationship between research and society and the changing role of research in knowledge production and use mean that there is a need to rethink and

adapt the concept of quality as it is employed in current research evaluation procedures.

Applied and practice-based research are not methodologically depleted forms of research; rather they can be innovatory modes of research that cater for a different set of needs and define quality in terms of wider social robustness.

We have also noted that applied and practice-based research stand at the intersection of many interest groups and thus of many interpretations of quality; any assessment of quality therefore

needs to be multi-layered, and multi-dimensional in approach.

In considering what a broader, multi-dimensional approach to quality might be, it is clear that traditional dimensions of quality, such as methodological and scientific robustness, still have their place. These we characterise as the *epistemic* dimensions of research quality; they are traditionally the most visible in research reports and, as the current interest in systematic reviewing demonstrates, they form the dimension of quality that is often extended to cover almost the entire concept of quality used in assessing social research.

On the other hand, from the perspective of the commissioning and funding agencies, as well as in terms of the institutions where researchers work, it is important whether the money invested in a research project is well spent, and whether there are gains in competitiveness that add value to it: we call this the *economic* dimension of research quality.

But as we have seen, applied and practice-based research are concerned with more than methodological perfection, theoretical growth, or cost-effectiveness. If applied research is explicitly conducted in, with, and/or for practice (or policy), then whatever we take practice or policy to be would fundamentally shape our judgement of the ways in which

research supports them and relates to them. At least two dimensions are relevant here. One is concerned with the 'technical' dimensions of practice - the 'capacity to make', in Aristotelian terms; the other focuses on the 'capacity to act' usually equated to practical wisdom.²⁴

These suggest that there are at least two senses in which a research project can be evaluated in terms of its contribution to practice and to practitioners. The first is the extent to which it provides them with facts, evidence, experiments, new ideas etc., in a fashion that can be instrumental. This is what we call the *technological* dimension of research quality – its value for use.

The second is its contribution to the collective and personal growth of practitioners and policy makers; changing them as people through establishing forms of collaboration and partnership, increasing their receptiveness, reflexivity, virtuousness, and morality. This we call *capacity building and value for people* in terms of the development of tacit knowledge and of the ethical, interactional and critical dimensions of practice.

It is these four dimensions of quality – (i) *epistemic*, (2) *technological*, (3) *capacity building and value for people* and (4) *economic* – that form

the basis for the framework that we set out below.

As a framework, it is not intended to be prescriptive but aims to inform the ongoing discussions and research assessment processes.

The dimensions and sub-dimensions included in our framework are therefore only intended to be illustrations of aspects worthy of consideration and for which a reasonable degree of support could be inferred from the interviews, the consultation and the literature review. As such, they provide a set of dimensions along which research might need to pass a threshold of quality if it were to aspire to excellence.

6. Dimensions of quality



6.1 Methodological and theoretical robustness – the epistemic dimension

As the huge literature on research methodology demonstrates, there is widespread variation in the standards and

conceptualisations of quality adopted by the numerous and often competing traditions of educational research. However, despite the ongoing controversies, there is also evidence of a more or less shared core of concerns when it comes to examining methodological and theoretical robustness.

This does not mean that all traditions of research share the same methodological concerns, but rather that their standards of quality may overlap in places.

The following sub-dimensions illustrate attributes of research that seem to be reiterated, though in different interpretations, across a wide range of models of research, and that are therefore worth considering when planning an appraisal process.

a) Trustworthiness.

Trustworthiness is fundamental in judging research quality but it is a concept that is defined very differently in different research traditions. Concerns about reliability; groundedness²⁵, dependability²⁶, believability²⁷, plausibility; authenticity etc. derive from different interpretations. There is also a set of requirements, again falling under the umbrella of 'trustworthiness', that has to do with 'virtuous' research

(e.g., honesty and integrity of researcher)²⁸. But despite the fundamental differences between many of the philosophical presuppositions that underpin each research tradition, they seem to point to the same direction: to a shared concern about the strength of warrants for the relation between the research process and its representation of the world.

b) Contribution to knowledge.

There is also wide agreement that research should build on what is known and contribute to it, for instance by providing a wider theoretical coverage, or by enhancing the conceptual clarity in the field.²⁹ The concept of novelty or originality is often invoked, and it is usually defined in terms of conceptualisations, systematisations, theoretical insights, methods and techniques, theoretical perspectives, or unique viewpoints.

c) Explicitness in designing and reporting.

Explicitness implies that a great deal of care, reflexivity, and systematic attention to detail need to be involved in the design and the reporting of research, together with an effort to make it as clear and communicable to others as its nature permits. Explicitness is essential in that it is the

feature that makes research peer-reviewable.

d) Propriety. This involves the degree to which research conforms to legal requirements and to ethical principles, often formalised in the relevant professional communities as ethical codes.

e) Paradigm-dependent criteria. Finally we need to recognise that what is good research may well vary for any individual project on each of the above dimensions depending on the particular paradigm used - by 'paradigm' here we mean a complex of epistemological/ philosophical and methodological traditions, shared practices etc used within a particular 'epistemic community'³⁰.

6.2 Value for use - the technological dimension

As Carol Weiss has so clearly demonstrated³¹, most research does not have a direct impact on either policy or practice; rather it works over a long period, changing our assumptions about the world and about the questions that need to be asked. This she characterises as 'knowledge creep'; a process that may take as long as 20 years. Therefore, if we are to appraise a piece of research on its value for use, we need to concentrate not on its

actual impact – something that would be almost impossible to assess in the short term - but on its *potential value* and on the openings that it provides to realise that potential. As such, a lack of consensus is only to be expected, and the following are only illustrations of what could be the relevant sub-dimensions.

- a) **Salience/ timeliness.** One of the advantages of applied and practice-based research is that it can be much more finely tuned to the solving of concrete and current problems. However, if it is to avoid being ephemeral³², research needs to strike a balance between short-term and long-term benefits; it is nonetheless very difficult to argue that there is an inherent hierarchy between these two types of effects.
- b) **Purposivity.** Fitness for purpose is a common requirement for any research project, and it becomes particularly relevant for any model of research that is focused on being of use.
- c) **Specificity and accessibility.** This refers not to narrowness of scope, but to the ways in which research responds to the needs of the users and to their specification, as well as to the (foreseeable) specific contexts of use³³, and the efforts being made to ensure the accessibility of research to a practitioner audience.

d) **Concern for enabling impact.**

As two recent literature reviews highlight³⁴, a range of different strategies is available to facilitate the impact of research e.g. active dissemination, closer links between researchers and practitioners, and recruiting expert and peer opinion leaders. These strategies can be built into the research design, and a concern for allowing them to be put in place can be expressed even in the proposal stage.

e) **Flexibility and**

operationalisability. Applied and practice-based research can provide links and openings that allow them to be operationalised in the development process. The link to development depends on the nature of the research question, the level at which it has been pitched, and the characteristics of the intended users and audience.

6.3 Capacity building and value for people

As we have already argued, practice (and policy as a form of practice) can be thought of as a space for the use of practical wisdom. Practical wisdom as a concept has a number of important characteristics. Firstly, it involves

tacit knowledge³⁵ recognising that it can be just as important as explicit knowledge.

In addition, through its ethical dimension and its concerns for 'good' action, practical wisdom turns uncertainty and situatedness from being a weakness (i.e., lack of accuracy and definite knowledge) to being a strength (i.e., ethical human encounters where virtue develops and is enacted). Finally, practical wisdom involves deliberation and choice³⁶, and therefore self-reflection, as Schön's (1983) captures in his concept of reflection. This opens up the idea of practical wisdom for collaboration, and to a critical attitude. Many see these characteristics as crucial for the better understanding of educational practice³⁷ and for informing modes of research that move closer to practice by focusing on the enhancement of (ethically) authentic action, rather than on the accumulation of (theoretical) knowledge³⁸.

Of course, because the roots of this dimension are in ethical concerns and in tacit, situated knowledge, it is extremely difficult to capture in the research appraisal process. The best we can hope for is probably to identify some features that might in some way be connected with these aspirations, and try to take them into consideration whilst evaluating it. Features that

would help in judging whether the project was likely to achieve capacity building and value for people in this way could be:

- a) **Partnership, collaboration and engagement** in and with research– plus involvement in the knowledge production;
- b) **Plausibility** from a practitioner's perspective;
- c) **Reflection and criticism** research that permits 'self reflection, self development and expansion of control over acting opportunities'³⁹
- d) **Receptiveness** enhanced receptiveness to the practitioner's viewpoint, amongst professional researchers, but also receptiveness to research amongst practitioners, policy makers and in the larger public sphere;
- e) **Stimulating personal growth.**

6.4 The economic dimension

Finally we need to recognise that in the evaluation of research by the organisations that fund or commission it, but also in the public arena, there is a clear concern for research to provide 'value for money'.⁴⁰ Value for money can be either directly quantifiable (such as the number of successful curricular materials produced or consultancies contracted as a follow-up, all related back to the costs of the original project), or it can be expressed in terms

of competitiveness on a national and international market where research prestige, capacity and dissemination can be crucial in securing further funding for the organisation, for the project, or for the individuals involved. The following aspects of research might be relevant in this respect:

research and inter-institutional market);

- a) **Cost-effectiveness;**
- b) **Marketability and competitiveness** (on the

- c) **Auditability;**
- d) **Feasibility;**
- e) **Originality;**
- f) **Value-efficiency**⁴¹.

The dimensions and sub-dimensions of applied and practice-based research quality proposed here can be summarised as follows:

		Dimensions of quality			
		<i>Epistemic: methodological and theoretical robustness</i>	<i>Technological</i>	<i>Capacity development and value for people</i>	<i>Economic</i>
Quality sub-dimensions	Trustworthiness		Purposivity	Plausibility	Marketability and competitiveness
	Builds on what is known +contribution to knowledge		Salience/ timeliness	Partnership, collaboration and engagement	Cost-effectiveness
	Explicitness		Specificity and accessibility	Reflexivity, deliberation and criticism	Auditability
	Propriety		Concern for enabling impact	Receptiveness	Feasibility
	Paradigm-dependent criteria		Flexibility and operationalisability	Transformation and personal growth	Originality
		<i>Scientific robustness</i>		<i>Social & economic robustness</i>	

7. Using the framework for judging research quality



The framework we have outlined above only goes as far as suggesting a possible set of sub-dimensions for each of the main dimensions. They are not intended to be prescriptive - merely illustrations of what the four dimensions might mean. We have also deliberately stopped short of defining indicators or giving thresholds that need to be reached on each dimension. If thresholds are appropriate then they would need to be developed in each context, using the framework as a starting point but straying from it whenever necessary.

Central to our thinking is the idea that any one research project is likely to favour some aspects of the framework over others. For instance, if the main claim that a project is making is its contribution to the development of public (codified) knowledge, the dimensions of quality assurance that it would pursue would be different from those relevant to

a project that claimed its central concern was a contribution to the development of practices or to the personal enhancement of the people involved. In addition, some agencies would place emphasis with the methodology and impact, while a policy-maker might be more interested in the economic benefits and the potential for change that a piece of research carries. In short, the ways in which each evaluating agency adapts our framework needs to be based on a clear description of the situation and on an awareness of the multiplicity of dimensions, as outlined in the framework. However we would suggest that the criteria they develop for assessing the quality of applied and practice-based research in their particular contexts should still touch in one way or the other the dimensions that we have identified.

Finally, as we have indicated in the title of this paper, our framework is intended as a stimulus for discussion. If you have comments on what we have proposed here or would like to contribute to its further development, then please contact us at:

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Appendix: Recent UK Initiatives with Relevance for Applied and Practice-Based Educational Research

1. *Tightening links between research and policy & practice:*
 - a. *Promoting research use and usability* – e.g. Research Unit for Research Utilisation (RURU), at the University of St Andrews; Centre for the Use of Research and Evidence in Education (CUREE); the Learning and Skills Development Agency review of research impact; the Teaching and Learning Research Programme Transformation and Impact Thematic Group;
 - b. *Promoting an evidence base for policy and practice* – e.g. EPPI-Centre; the Evidence Network and the UK Centre for Evidence-Based Policy and Practice at Queen Mary University of London (ESRC); the NERF Evidence for Teaching and Learning Bulletin; the Teacher Training Agency (TTA) Consortia;

2. *Codification and communication of accredited knowledge*
 - a. *Codifying the knowledge base for education* – e.g. EPPI Centre's systematic reviews (and the entire systematic review movement);
 - b. *Translating and disseminating research* – e.g. the TTA Effective Practices and Research Dissemination Team; the Research Informed Practice website (TRIPS) of the Department for Education and Skills (DfES); the Professional User Reviews (British Educational Research Association); the Research of the Month site (General Teaching Council for England); the TTA grants for the dissemination of teacher MA and PhD work; the National Teacher Research Panel.

3. *Promoting teacher (engagement in) research and practice-based research* – e.g. the Best Practice Research Scholarships (DfES); TTA Teacher Research Consortia; National Teacher Research Panel; CASE (Collaborative Awards in Science and Engineering) Studentships (ESRC); DfES CPD strategy; Chartered Teacher Programme (Scotland); Teacher Research Support Network (Scotland, Scottish Executive Education Department - SEED); TTA Consortia.

4. *Action research and co-operative enquiry*: - e.g. the Centre for Applied Research In Education (CARE - University of East Anglia); the Collaborative Action Research Network (CARN - Manchester Metropolitan University and St Martin's College); the Centre for Action Research in Professional Practice (University of Bath).
5. *Applied research partnerships and large-scale programmes* – e.g. Teaching and Learning Research programme (ESRC); Applied Educational Research Scheme (Scottish Higher Education Funding Council and SEED); Networked Learning Communities (National Council for School Leadership) ; LSDA Regional Research Scheme; TTA Consortia.
6. *Use-inspired basic research*: there is a vast number of research projects located in a wide range of organisations e.g. EPPE (Effective Provision of Pre-School Education). Some of the TLRP projects are examples .
7. *Evaluation research* – e.g. democratic evaluation (CARE); the teacher-evaluators approach etc.
8. *Capacity building*
 - a. *Award-bearing courses with an applied or practice-based focus* – e.g. EdD programmes; the Scottish masters' degree in Applied Educational Research (AERS);
 - b. *Methodology training* – e.g. the Research Capacity Building Network's Research Training Module (AERS); ESRC Research Methods Programme; TLRP Research capacity Building Network.

Notes

¹ Hargreaves, DH (1996). *Teaching as a research based profession: possibilities and prospects*. London, Teacher Training Agency.

² Hillage, J., Pearson, R., Anderson, A. and Tamkin, P. (1998). *Excellence in research on schools*. London, DfEE.

³ See for example Howard Newby's evidence to the Select Committee on Education and Skills in 2003 (Select Committee on Education and Skills, 2003).

⁴ See for instance the TLRP Transformation and Impact Thematic Group; LSDA's review of impact, 2003; the NERF Quality Sub-group, 2000; EPPI's inclusion/exclusion criteria and quality assessment for systematic reviewing; or the GTCE and the NTRP criteria for research quality.

⁵ UK Funding Bodies (2001) RAE 2001 – *Panels' Criteria and Working Methods*. Section 3.59 Education (UoA 68).

⁶ UK Funding Bodies (2003) *Review of Research Assessment*. Report by Sir Gareth Roberts; HM Treasury, DfES and DTI (2003) *Lambert review of Business-University Collaboration*. Final report. London: HMSO.

⁷ UK Funding Bodies (2005) *Guidance to Panels*. Ref. RAE 01/2005.

⁸ Demeritt, D. (2000) The new social contract for science: accountability, relevance and value in UK and US science and research policy. In: *Antipode*, 32 (3), pp. 308-329.

⁹ Davies, P. (1999) What is evidence-based education? In: *British Journal of Educational Studies*, 47 (2), pp. 108-121.

¹⁰ Gibbons, M., Limoges, C., Nowotny, H. et al (1994) *The New Production of Knowledge: The dynamics of science and research in contemporary societies*. Sage.

¹¹ Humes, W. and Bryce, T. (2001) Scholarship, research, and the evidential basis of policy development in education. In: *British Journal of Educational Studies*, 49 (3), p.330; Whitty, G. (2002) *Making Sense of Education Policy*. London: Paul Chapman Publishing.

¹² Demeritt, D. (2000) The new social contract for science: accountability, relevance and value in UK and US science and research policy. In: *Antipode*, 32 (3), pp. 308-329.

¹³ OECD (2002a) *Proposed Standard Practice for Surveys of Research and Development: The Measurement of Scientific and Technical Activities. The Frascati Manual*. Paris: OECD, p. 78.

¹⁴ Stokes, D.E. (1997) *Pasteur's Quadrant: Basic science and technological innovation*. Washington, DC: The Brookings Institution.

¹⁵ Ibid

¹⁶ OECD (2002b) *Educational Research and Development in England*, Paris: OECD.

¹⁷ Feuer, M. J. & Smith, M.S. (2004) *Toward Continuous Improvement of Research for Education Policy and Practice*. Report for the National Educational Research Forum. NERF, January 2004.

¹⁸ OECD (2002a), op.cit.

¹⁹ See Huberman, M. (1992) *Linking the Practitioner and Research Communities for School Improvement*. Address to the International Congress for School Effectiveness and Improvement, Victoria, B.C.; National Research Council, U.S.A. (1999) *Improving Student Learning: A Strategic Plan for Education Research and its Utilization. Committee on Feasibility Study for a Strategic Education Research Program*, Commission on Behavioral and Social Sciences and Education, National Research Council. Washington, DC: National Academy Press.

²⁰ E.g., Best Practice Research Scholarships etc. – see Appendix.

²¹ See Stenhouse, 1985, *Research as a Basis for Teaching: Readings from the work of Lawrence Stenhouse*, edited by Jean Rudduck and David Hopkins, Heinemann. Educational Books, Oxford / Portsmouth NH; Carr, W. (1989). Action Research: Ten years on. *Journal of Curriculum Studies*, 21 (1), 85-90; Elliott, J. (1991) *Action Research for Educational Change*. London: Allen and Unwin.

²² Schön, D. A. (1983) *The Reflective Practitioner*. New York: Basic Books.

²³ Gibbons et al (1994) Op.cit., p.8.

²⁴ In *Nicomachean Ethics* (translated by William David Ross, 1908, Oxford: The Clarendon Press) Aristotle distinguishes between *episteme* (knowledge that is demonstrable through valid reasoning); *techne* (a trained ability to produce rationally); and *phronesis* ("practical wisdom", or the capacity to act truthfully and with reason in matters of deliberation, thus with a strong ethical dimension). To this distinction he adds comments on *nous* (capacity of grasping both particular facts and fundamental principles, which are necessarily true) and *sophia* (theoretical wisdom – true knowledge of the principles and of what follows from them). Together these faculties point to intellectual excellence as a *virtue*.

²⁵ Strauss, A. and Corbin, J. (1990) *Basics of Qualitative Research. Grounded theory procedures and techniques*. Newbury Park, London, New Delhi: SAGE Publications.

²⁶ Lincoln, Y.S. and Guba, E.G. (1985) *Naturalistic Inquiry*. Newbury Park, London, New Delhi: SAGE Publications.

²⁷ Hodkinson, P. (2004) Research as a form of work: expertise, community and methodological objectivity. In: *British Educational Research Journal*, Vol. 30 (1) pp. 3-8

²⁸ Pring, R. (2001) The Virtues and Vices of an Educational Researcher. In: *Journal of Philosophy of Education* (Special Issue), Vol. 35 (3).

²⁹ We would perhaps suggest that 'contribution to knowledge' is one of the defining characteristics of research generally, thus differentiating applied research from say 'research informed CPD'.

³⁰ Knorr-Cetina, K.D. (1981) *The Manufacture of Knowledge: An essay on the constructivist and contextual nature of science*. Oxford: Pergamon.

³¹ Weiss, C.H. (1997) *Evaluation. Methods for Studying Programs and Policies*. 2nd edition. NJ: Prentice Hall

³² Breuer, F. and Riechertz, J. (2002) Standards of Social Research. In: *Forum Qualitative Sozialforschung/ Forum: Qualitative Social Research* [On-line journal]. Vol. 2 (3).

³³ SCIE (2003) *Types and Quality of Knowledge in Social Care*. (Pawson, R. et al.) London: Social Care Institute for Excellence.

³⁴ See the review by RURU (2004), and also the LSDA (2003) 'models of impact' systematic review.

³⁵ Ryle's (1949) and Polanyi's (1996) work offer enough arguments to at least cast a serious doubt over any understanding of research that starts from the presupposition of overall articulability of knowledge.

³⁶ Practice as a human encounter has a dialogical aspect characterised by an interaction, in which people work together in a combination of mutual support and mutual criticism or challenge; see Long, C.P. (2002) The ontological reappropriation of phronesis. In: *Continental Philosophy Review*, 35, pp. 35-60

³⁷ Carr, D. (2003) Rival conceptions of practice in education and teaching. In: *Journal of Philosophy of Education*, 37 (2), pp. 253-267.

³⁸ Carr and Kemmis (1986); see also, in the early 1980s, the debate between Hirst (1983) and White & White (1984), over the role of tacit knowledge- teachers' operational theories - and that of the disciplines and of philosophical reflection in justifying educational practices - summarised by Elliott (1987).

³⁹ Breuer and Reichertz (2002), Op. cit., p. 6.

⁴⁰ Incidentally, many criticisms of educational research during the nineties (and most notably those who were picked upon by the media) were levelled on counts of poor value for money (Tooley and Darby, 1998; Hillage, 1998, Op.cit.).

⁴¹ A composite indicator of research quality in bibliometric and economic terms (Korhonen, P., Tainio, R. and Wallenius, J. [1998] *Value Efficiency Analysis of Academic Research*. Interim Report IR-98-032/June to the International Institute for Applied Systems Analysis.).

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