Epistemology Of Education

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1 Introduction

Over the past several decades, increasing overlap has emerged between projects in mainstream epistemology and corresponding projects in the philosophy of education. This is no doubt in part because epistemology's focus has broadened far beyond the post-Gettier project of analysing propositional knowledge; front and centre on the contemporary epistemological agenda are philosophical problems associated with (for instance) epistemic value, understanding, knowledge-how, testimony and intellectual virtue. Unsurprisingly, many of the epistemological

problems associated with these notions have counterparts in educational theory. For example, just as epistemologists ask about our *epistemic aims* (aims we have from a purely epistemic point of view) so philosophers of education ask what kinds of cognitive goods and traits an education should aim at inculcating. Thus, the matter of what makes knowledge valuable to possess—just to take one example of many—is a matter that falls squarely within the purview of *both* epistemological and educational disciplines. This entry aims to categorise and briefly summarise a range of such overlapping projects, under the description of the *epistemology of education*. While textbooks and anthologies on the specific matter of intersections between education and epistemology are relatively scarce (though we've noted some examples), the literature in mainstream philosophy, epistemology and education journals on the epistemological dimensions of education is flourishing. On the basis of what we take to be the most natural dividing lines, we've categorised the entry into the following sections: The Concept of Education: Epistemological Issues (Learning, Teaching Education); Epistemic Aims of Education; Intellectual Virtues and Education; Rationality, Critical Thinking and Education; Understanding and Education; Knowledge, Epistemic Value and Education; and Know-How and Education.

2 General Overviews

While there are to date no monograph overviews of the epistemology of education, there are several accessible papers that outline and engage with core issues at the intersection of epistemology and the philosophy of education. Robertson (2009) and Schmitt (2005), for instance, offer accessible perspectives on the epistemic *aims* of education, and Elgin (1999) argues that (contrary to one widely assumed picture) the epistemic aims of education should be framed in terms of the epistemic state of *understanding* as opposed to knowledge. Siegel (2004) outlines, in particular, some of the central epistemically relevant issues in the epistemology of education and connects these problems to recent work in social epistemology.

Elgin, C.Z. (1999). 'Epistemology's Ends, Pedagogy's Prospects'. *Facta Philosophica* vol. 1, pp. 39-54.

> Outlines and challenges as implausibly demanding the received picture of teaching and learning captured by Plato's Teaching Assumption, the thesis that since teaching consists in conveying knowledge, you cannot teach what you do not know.

Robertson, E. (2009). 'The Epistemic Aims of Education' In: Siegel, H. (ed.) *The Oxford Handbook of Philosophy of Education*. Oxford: OUP.

> Argues that an understanding of the social conditions of knowledge

production is crucial to facilitating the educational aim of fostering independent thinking.

Schmitt, F. (2005). 'What are the Aims of Education?' *Episteme* vol. 1, no. 3, pp. 223 - 33

Argues that the education aim of a liberal arts education is best understood as *justified* belief.

Siegel, H. (2004). 'Epistemology and Education: An Incomplete Guide to the Social-Epistemological Issues'. *Episteme*, vol. 1, pp 129-137.

Attempts to connect social epistemology and the philosophy of education by arguing that many or most of the live epistemological issues concerning education are or should be of great interest to social epistemologists.

3 Textbooks

No textbooks of epistemology of education exist as such. However, the textbooks of philosophy of education edited by Bailey et al (2010), Blake et. al (2003), Curren (2003), Hirst & White (1998), Siegel (1998) and Wilson (1979) contain ample reference to epistemological issues in the philosophy of education.

Bailey, R., Barrow, R., Carr, D. and McCarthy, C. (eds.) (2010). *The SAGE Handbook of Philosophy of Education.* London: SAGE.

Accessible wide-scoping guide to the philosophy of education. Divided into three parts; the first part features different styles of approach to the philosophy of education, and the second and third parts focus on historical and contemporary work, respectively.

Blake, N., Smeyers, P., Smith, R. and Standish, P. (2003). *The Blackwell Guide to the Philosophy of Education*, Oxford: Blackwell.

Contains introductions to core areas of philosophy of education; includes 20 articles by distinguished contemporary scholars commissioned for the volume.

Curren, R. (ed.) (2003). *A Companion to the Philosophy of Education*, Oxford: Blackwell.

A comprehensive guide to philosophical thinking about education, including a section with epistemologically oriented pieces on teaching and learning.

Hirst, P.H. and White, P. (1998). *Philosophy of Education: Major Themes in the Analytic Tradition*, London: Routledge.

A 1700+ page collection of classic and contemporary readings on major themes in the philosophy of education, as approached within an analytic tradition.

Siegel, H. (ed.) (2009). *The Oxford Handbook of Philosophy of Eduaction.* Oxford: OUP.

Includes 28 commissioned articles on a range of topics in the philosophy of education; two sections are devoted to epistemologically oriented themes, including eight articles on the subtheme 'Thinking, Reasoning, Teaching and Learning' and four articles on the subtheme 'Knowledge, Curriculum, and Educational Research'.

Wilson, J. (1979). *Preface to the Philosophy of Education*, London: Routledge & Kegan Paul.

Seminal text outlining the nature of philosophy of education and defines some of its major problems, including the value of education and normative dimensions of learning.

4 Anthologies

Next to Kotzee (2013) few anthologies of epistemology and education exist. However, the anthologies by Carr (2005) and Curren (2006) contain many relevant readings.

Carr, W. (2005). *The Routledge Falmer Reader in Philosophy of Education*, London: Routledge.

Contemporary reader on enduring issues in the philosophy of education; includes a section with readings on the aims of education.

Curren, R. (ed) (2006). *Philosophy of Education: An Anthology*, Oxford: Blackwell.

Comprehensive anthology that includes, along with contemporary readings, classical readings by such figures as Plato, Aristotle, Isocrates, Locke, Rousseau, Mill, and Dewey

Kotzee, B. (2013). (Editor) *Education and the Growth of Knowledge,* Special Issue of *Journal of Philosophy of Education,* 47 (2).

First-ever collection of papers dedicated to issues at the intersection of the philosophy of education and contemporary epistemology. Includes readings by prominent philosophers of education as well as leading epistemologists.

5 Epistemic Concepts in Education

A number of concepts of educational import are epistemic concepts. These are the concepts of *learning* – having to do with an individual's moving from a state of less to greater knowledge – the concept of *teaching* – having to do with someone instructing another in order to bring about learning, and *education* – roughly the concept of a process of bringing about learning in another intentionally by teaching or other means. These epistemic concepts in particular play a structuring role in the philosophy of education and, in its earliest conceptual analysis phase (associated with the work of, for instance, Peters, Hirst and I. Scheffler), philosophy of education focussed mainly on the analysis of these three concepts. Here, we write, of course, of learning, teaching and education as *epistemic* concepts and an important question is whether learning, teaching and education are firstly, or only, epistemic concepts. Some point out that, in addition to learning, teaching and educating (for) knowledge, much educational effort is also directed at learning, teaching and educating (for), for instance, moral or political values, aesthetic appreciation and so forth. The dispute may be over whether the concepts learning, teaching and education belong firstly to epistemology or to ethics, political philosophy, aesthetics, etc. One may allow that the concepts in question can be usefully studied by multiple areas of philosophy. This is the approach of those who distinguish education's cognitive from its moral, aesthetic, economic, etc. aims. Alternatively, one may wish to insist that the concepts in question are at root epistemic concepts in that, even when pertaining to morals, aesthetics or economics, they still have to do with the increase of moral, aesthetic or economic knowledge or understanding on the part of the learner.

5.1 Learning

Probably the most general concept in the area is that of learning. A number of sources (e.g. I. Scheffler (1965) and Hamlyn (1967)) point out that one

ordinary sense of the word 'learning' is coming to know truths. One fertile area of discussion concerns whether learning, properly speaking, requires more than knowing truth; Hamlyn, for instance, is opposed to calling rote learning of facts 'learning'. Important distinctions in the area are between (1) learning that comes about as the consequence of teaching, and learning that occurs independently and (2) learning that something is the case and learning how to do something. Winch (1998) and Cigman and Davis (2009) provide book-length treatments of contemporary approaches to the concept of learning. Hager (2005) and Luntley (2005 and 2008) provide critical accounts, holding that learning is not primarily about knowledge of propositions (Hager 2005) or theory-formation (Luntley 2005 and 2008). Davis (2010) focuses on classroom applications.

Cigman, R. and Davis, A. (2009). *New Philosophies of Learning.* Oxford: Wiley-Blackwell.

> Significant volume exploring recent philosophical approaches to learning. Notable especially for an exploration of what the neuroscience of learning may contribute to the field.

Davis, A (2010). 'Learning', in Bailey, R., Barrow, R., Carr, D. and McCarthy, C. (eds) *The Sage Handbook of Philosophy of Education.* London: Sage, pp. 323-336.

> A handy summary of approaches to the concept 'learning' and to the theory of learning in general. Divides current conceptions of learning into 'transfer' and 'construction' conceptions.

Hager, P. (2005). 'Philosophical Accounts of Learning'. *Educational Philosophy and Theory*, vol. 37, no.5, pp. 649 - 666.

> Provides an overview of the contrasts between some main philosophical theories of learning. Seeks to challenge what it calls dominant understanding of learning, in particular that learning is an individual activity and results in knowledge of propositions.

Hamlyn, D. (1967). 'The logical and psychological aspects of learning', in Peters, R.S. (ed) *The Concept of Education*, London: Routledge & Kegan Paul, pp. 24-43.

> Considers the relationship between the psychological analysis of processes of learning and the logical analysis of concepts. Sets requirement for learning, properly speaking, to go beyond rote-learning and to encompass understanding and application of principles.

Luntley, M. (2005). 'The Character of Learning', *Educational Philosophy & Theory*, vol 37, No. 5, pp. 689-704.

> Contrast learning as the acquisition of theoretical knowledge and learning as the development of 'insight'. Rejects learning as a process of general theory formation (and criticises, in passing, popular theory-formation views of child development). Gives an account of insight as the focussing of attention on a particular case.

Luntley, M. (2008). 'Conceptual Development and the Paradox of Learning', *Journal of Philosophy of Education,* Vol 42, No. 1, pp. 1 – 14.

> Discusses Fodor's 'paradox of learning' (to the effect that the most plausible account of learning new concepts presupposes that the learner already understands the concepts supposed to be learned). Provides a solution to the paradox to the effect that there can be a form of discrimination of particulars before proper conceptual discrimination. Gives special importance to the affective dimension of learning.

Winch, C. (1998). *The Philosophy of Human Learning.* London Routledge.

> Significant book-length treatment of the philosophy of learning. The book opposes seeing learning as primarily or solely a psychological concept. In explaining the philosophical concept of learning, it rejects cognitivist and developmentalist accounts and seeks to build a social and normative account of learning (based on Wittgenstein).

5.2 Teaching

Learning can come about in a number of different ways. Any person constantly learns by experience and self-discovery. A person may learn many things by accident, even. However, a sub-set of all learning is achieved by teaching: by one person actively instructing another to bring about learning. One may teach knowledge that by telling someone something – in this mode, teaching is analogous to testifying. However one may also teach another know-how or practical skill; in this mode teaching is showing (a matter to which comparatively little attention is given in the epistemology of know how.) Some of the most important questions about the concept teaching are whether teaching must be intentional and what distinguishes teaching, properly speaking, from other (legitimate) modes of instruction such as drill or practice or other (illegitimate) modes such as indoctrination. I. Scheffler (1965) and Dearden (1967) provided some of the first conceptual analyses. The account of teaching in Hirst (1973),

that teaching involves intentionally bringing about learning in students, is arguably the most influential. Passmore (1980) is critical of the intention element identified by these authors as important. Phillips (2003) relates the concept of teaching to the concept of learning (see discussion above).

Dearden, R.F. (1967). 'Instruction and learning by discovery', in Peters, R.S. (ed) *The Concept of Education*, London: Routledge & Kegan Paul, pp.135-155.

> Sets out the contrast between learning achieved independently and learning achieved via teaching.

Hirst, P. (1973). 'What is Teaching?', in Peters, R.S. (ed) *The Philosophy of Education*, Oxford: OUP,pp.163-177

> Sets out Hirst's view that teaching is a polymorphous activity and that teaching is the activity of a teacher who intentionally aims to bring about learning in a student. Arguably the classic account of teaching.

Passmore, J. (1980). *The Philosophy of Teaching*, London: Duckworth. Chapter 2: 'The Concept of Teaching', pp. 19-33.

> Critical of the view that teaching primarily involves subject content and must always be intentional. Sets out a view of teaching as a 'covert triadic relationship' in which (1) a teacher teaches a student something (the triadic relationship) (2) in a manner that need not be completely transparent to both parties (covert).

Phillips, D.C. (2003). 'Theories of Teaching and Learning', in Curren, R. (ed) *A Companion to the Philosophy of Education*, Oxford: Blackwell, pp. 232-245.

> Explores the link between the concept of learning and the concept of teaching.

Scheffler, I. (1965). *Conditions of Knowledge*, Glenview, Illinois: Scott, Foresman and Company. Chapter 1: 'Knowledge and teaching', pp. 7-21.

> Sets out the view that teaching is the activity of attempting to bring about belief in the student through rational means. The paper is influential for what is implied by this: that indoctrination, as non-rational instruction, is not education.

5.3 Education

The concept education may indicate a social system organised to deliver teaching – in this sense, education is most often associated with schooling. Alternatively, it can refer to a process – in this sense, the concept is not that far away from teaching. Regarding both, however, education denotes something more than simply teaching or a system of teaching. According to Peters (1967), education is a normative concept: if a process or experience is worthy of being called 'an education' it is something that is desirable or worthwhile. Moreover, for Peters (1967), education is a process that is morally permissible – morally impermissible processes, such as indoctrination, cannot count as education. Next to attempts to analyse the concept education directly, attempts have also been made to analyse the concept of an 'educated person'. The concept 'educated' has likewise received considerable scrutiny.

Barrow, R. and Woods, R. (1988). *An Introduction to Philosophy of Education*, London: Routledge. Chapter 1: 'The concept of education', pp. 8-20.

> Investigates whether education conceptually and explores the links between the concepts 'education' and 'educated'

Cuypers, S.E. and Martin, C. (2011). *Reading R.S. Peters Today.* Oxford: Wiley-Blackwell.

> Volume focussed on the work of R.S. Peters. Given the importance of Peters's work in analysing concepts in education generally, this volume is of interest not only for an understanding of Peters's work, but in providing contemporary contributions to the central themes in studying the concept education.

Hirst, P.H. & Peters, R.S. (1970). *The Logic of Education*, London: Routledge & Kegan Paul.

> Outlines a concept of education as involving a desirable process and the promotion of knowledge or understanding. Defends these two elements against objections.

Peters, R.S. (ed) (1967). *The Concept of Education*, London: Routledge & Kegan Paul.

> Volume edited by Peters that contains many of the influential papers on the concept education. Also contains important papers on teaching, learning and indoctrination.

Peters, R.S. (1970). 'Education and the educated man', *Journal of Philosophy of Education* 4 (1), pp.5-20

> In a departure from his earlier conceptual analyses of education, Peters holds in this paper that our contemporary conception of what counts as an educated person is historically informed.

Siegel, H. (2008). 'Is Education a Thick Epistemic Concept'. *Philosophical Papers*, vol. 37, no.3, pp. 455-469.

> Sketches an account of education as a normative epistemic concept.

White, J. (1982). *The Aims of Education Restated*, London: Routledge & Kegan Paul. Chapter 6: 'The Educated Person', pp.121-139.

> Presents an argument that the educated person is one who can determine their own ends in life and, thereby, flourish.

Wilson, J. (1979). *Preface to the Philosophy of Education*, London: Routledge & Kegan Paul. Chapter 1: 'Education – the Words and the Enterprise', pp.15-43.

> Defends the importance of conceptual analysis of educational terms. Distinguishes institutional, activity and subject senses of the concept education.

6 Epistemic Aims Of Education

The *aims* of education are often characterised in terms of certain kinds of *epistemic* goods. But what particular goods an education should aim to foster remains an important area of debate in the epistemology of education, and one which has attracted the interest of epistemologists working on the closely connected issue of what epistemic states (and cognitive abilities or virtues) are the most epistemically valuable ones to achieve, and why. Perhaps the most famous discussion of the epistemic aim of education features in Plato's classic discussion in the *Republic* of the Allegory of the Cave, an aim--pursued by metaphor--that might be best understood as an epistemic *process*. By contrast, Goldman (1999) characterises the aim of education in terms of, and by comparison with a traditional line of thinking in the philosophy of science, the production of knowledge. It follows, on Goldman's approach, that the educational value of the cultivation of certain dispositions or traits are always only of *instrumental* educational value, relative to the goal of knowledge-production. While Adler (2003) attempts to develop and defend Goldman's knowledge account further, Siegel (2003; 2005)

and Baehr (2013) represent two importantly different strategies of departure from Goldman's knowledge account. On Siegel's view, *critical thinking*—and, more generally, reasoning—is an ability an education should aim to foster *independently* of any connection between critical thinking and truth or knowledge. On Siegel's view, critical thinking can be viewed as supplanting knowledge as what is fundamental or basic vis-a-vis the aim of an education. Baehr (2013) departs from the knowledge account by, like Siegel, focusing on the value of cultivating disposition as opposed to states. For Baehr (2013), however, the aim of education ought to be articulated, specifically, in terms of intellectual character virtues, virtues that are individuated in part in terms of their characteristic motivations (e.g. open-mindedness, intellectual courage).

Adler, J. (2003). Knowledge, Truth and Learning' in *A Companion to the Philosophy of Education*, ed. Randall Curren. Blackwell, pp. 285-304.

> Holds that the aims of education are mainly epistemic in that education should transmit knowledge. Defends such epistemic accounts against rival accounts that the aims of education are mainly moral aims and against sceptical accounts suspicious of knowledge and truth.

Baehr, J. (2013). 'Educating for Intellectual Virtues: From Theory to Practice. *Journal of Philosophy of Education*, 47(2), 248-262.

> Offers three arguments for the claim that education should aim at fostering 'intellectual character virtues' like curiosity, open-mindedness, intellectual courage, and intellectual honesty and discusses several pedagogical and related strategies for achieving this aim.

Goldman, A. (1999). *Knowledge in a Social World.* Oxford: OUP.

> Argues that the fundamental aim of education, like that of science, is the promotion of knowledge.

Plato. 'Turning the *Psyche'*, in Randall R. Curren (ed.), *Philosophy of Education: An Anthology.* Blackwell Pub.

> Famous extract from Plato's *Republic* in which the goal of education is characterised by appeal to the Allegory of the Cave.

Siegel, H. (2005). 'Truth, Thinking, Testimony and Trust: Alvin Goldman on Philosophy and Education'. *Philosophy and Phenomenological Research* vol. LXXI, no. 2, pp. 345 - 66.

> Argues, *contra* Goldman's that *critical thinking* is a fundamental end of education, independently of its instrumental tie to truth, and, further, that it is critical thinking, rather than testimony and trust, that is educationally basic.

Harvey Siegel (2003). 'Cultivating Reason' in *A Companion to the Philosophy of Education*, ed. Randall Curren. Blackwell, pp. 305-319.

> Defends the cultivation of reason and rationality as the over-riding educational ideal. Holds that the educational aim of rationality trumps other accounts (such as the aims of knowledge, happiness, citizenship, etc.)

7 Intellectual Virtues And Education

One especially fruitful point of connection between contemporary epistemology and the philosophy of education concerns the epistemic dimensions of intellectual virtues and their place in educational theory. Baehr (2011) and Roberts & Wood (2007) offer in-depth discussions of specific intellectual character traits (e.g. intellectual autonomy, honesty, humility and openmindedness), with special focus on advancing (respective) rationales for why such traits are valuable from an epistemic point of view. Relatedly, Hare (1993) and Carter *&* Gordon (2014) focus specifically on the trait of open-mindedness. Hare (1993) explores the nature and place of open-mindedness in educational theory, and Carter & Gordon (2014) defend openmindedness as an intellectual virtue even though, as they argue, its status as an intellectual virtue isn't explicable in terms of its connection to the aim of true belief. Along with engaging with intellectual virtues in their own right, a prevailing trend in mainstream epistemology--*virtue epistemology*--has sought to illuminate knowledge, justification and other epistemic concepts in terms of their connection to agents' intellectual virtues or (more broadly) cognitive character. The virtue epistemology programme has been, over the past several decades, well developed; Bevan (2009), Kotzee (2011), McAllister (2012) and Pritchard (2014) apply elements of the virtue epistemology (VE) approach to topics in education. Bevan (2009) and Macallister (2012) both develop proposals on which virtue epistemology can be appealed to in the service of developing a philosophical foundation for educational theory. Kotzee (2011) explores connections between 'thick' virtue epistemology and education, and Pritchard (2012) motivates the prospects for 'extended' virtue epistemology for the philosophy of education.

Baehr, J. (2011). *The Inquiring Mind: On Intellectual Virtues and Virtue Epistemology.* Oxford University Press.

> Defends a novel approach to theorising about intellectual character

virtues, and provides an analysis of several specific character virtues relevant to education, such as open-mindedness.

Bevan, R. (2009). 'Expanding Rationality: The Relation between Epistemic Virtue and Critical Thinking', *Educational Theory* vol 59, no. 2, pp. 167–179.

Explores the pedagogical implications of taking virtue epistemology as the philosophical foundation of educational theory; argues that critical thinking should be expanded beyond rationalist criteria to focus on the process of inquiry.

Carter, J. A. and Gordon, E.C. 'Openmindedness and Truth', *Canadian Journal of Philosophy*, vol. 44, no. 2, pp. 207-224.

Argues, that embracing openmindedness as an intellectual virtue requires we reject *epistemic value truth-monism*, the thesis that a trait's status as an epistemic or intellectual virtue is explained in terms of that traits connection with the aim of truth. Openmindedness is argued to be a virtue, by contrast, in virtue of its connection with the aim of understanding.

Hare, W. (1993). *Open-mindedness and Education.* McGill-Queen's Press-MQUP.

Detailed study of open-mindedness and its place in education

Kotzee, B. (2011). 'Education and "Thick" Epistemology', *Educational Theory*, vol. 61, no. 5, pp. 549-564.

Draws from insights by Siegel and Hare to propose benefits of a 'thick' approach to education and epistemology.

Macallister, J. (2012). 'Virtue Epistemology and the Philosophy of Education' *Journal of Philosophy of Education* vol. 46, no. 2, pp. 251 - 70

Proposes that developments in virtue epistemology may offer the resources to critique aspects of the debates (e.g. between Hirst and Carr) about how the philosophy of education ought to be carried out and by whom.

Pritchard, D. (2014). 'Intellectual Virtue, Extended Cognition, and the Epistemology of Education', Educating for Intellectual Virtues, (ed.) J. Baehr, (Oxford UP, forthcoming).

Motivates the plausibility of *extended* virtue epistemology, according to which technology which is out with the skin of the subject to nonetheless form a constitutive part of the subject's cognitive processes; it is then claimed that such an approach has a number of attractive features, and some of its implications for the epistemology of education are explored.

Roberts, R. and Woods, W. (2007). *Intellectual Virtues: An Essay in Regulative Epistemology.* Oxford: Clarendon Press.

Detailed epistemological exploration of specific intellectual character traits such as love of knowledge, intellectual autonomy, intellectual generosity, and intellectual humility.

8 Rationality, Critical Thinking And Education

An important tradition of thought suggests that education should be concerned with the development of independent thinking on the part of the learner. The philosophy of education has given much attention to the nature of the independent thought that we wish to develop through education and efforts in this area today are devoted to improve students 'critical thinking'. Authors such as Glaser, Ennis and Paul have identified basic critical thinking abilities (such as recognising arguments, analysing them, finding and criticising unstated assumptions, etc.) and proposed methods for measuring and improving students' critical thinking. Today, the field can be said to divide between those who hold that critical thinking amounts to facility with (formal and informal) logic and those who identify critical thinking more closely with attitudes in thinking (such as reflexivity, criticality, originality, etc.). Some of the most important debates in the area centre on whether critical thinking is culturally neutral and the extent to which philosophical logic can determine how critical thinking should be taught. Which view of critical thinking one holds will determine what one thinks educators should seek to develop in teaching for critical thinking. Facione (1990) provides the most widely accepted definition of critical thinking. Sanders and Moulenbelt (2011) provide an overview of alternative definitions, amongst them, the view in McPeck(1981) that critical thinking is not one set of skills. Siegel (1988) is important for its attack on relativism and its championing of critical thinking as a universal aim in education, a theme also explained in Winch (2006). Bailin (1995) and Cuypers (2004) provide contributions to debates about critical thinking's place in education. Halpern (2014) provides a detailed overview of the development, teaching and testing of critical thinking.

Bailin, S. (1995). 'Is Critical Thinking Biased: clarifications and implications' *Educational Theory* vol. 45, no. 2, pp. 191 – 7.

Discusses one important challenge to the idea of critical thinking: that the model of good thinking proposed by the critical thinking literature is biased in terms of gender and culture.

Cuypers, S. (2004). 'Critical Thinking, Autonomy and Practical Reason'. *Journal of Philosophy of Education* vol. 38, no. 1, pp. 75 - 90.

Explores and criticises Siegel's approach to critical thinking. Focusses on the Kantian justification of critical thinking in terms of respect for persons that Siegel provides and holds that it clashes with Siegel's Humean view of motivation to think critically.

Facione, P. (1990). *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction.* Newark: American Philosophical Association.

In this influential report (commonly known as the Delphi report) a committee of the American Philosophical Association provide an expert consensus on the definition of critical thinking and make recommendations for its teaching and assessment.

Halpern, D.F. (2014) *Thought and Knowledge: an introduction to critical thinking* (5th edition). New York: Psychology Press.

Influential handbook of critical thinking now in its 5th edition. Particularly notable for discussion of the psychology of critical thinking.

McPeck, J.E. (1981) *Critical Thinking and Education.* New York: John Wiley.

In this book, McPeck voices one of the most important criticisms of the critical thinking tradition: that critical thinking is not a collection of general thinking skills, but rather a collection of subject-specific thinking skills.

Siegel, H. (1988). *Educating Reason: rationality, critical thinking and education.* London: Routledge.

In this influential book, Siegel sets out the view that the main aim of education is to foster critical thinking on the part of students. Siegel spends much time countering relativist and post-modern criticisms and to establish that critical thinking skills are of universal educational worth.

Sanders, M. and Moulenbelt, J. (2011) 'Defining Critical Thinking: how far have we come?' *Inquiry* vol. 26, no. 1, pp. 38 – 46.

> Gives a good historical account of the development of different models of critical thinking.

Winch, C. (2006). *Education, Autonomy and Critical Thinking.* Routledge.

> Analyses the relationship between autonomy and critical thinking, to each other and to education. Explores the role of critical thinking in morality and politics and examines the role of critical thinking in preparing young people for autonomy.

Understanding And Education

Understanding, construed as an *epistemic state* (e.g. as when one understands *why* something occurred, or when one counts as understanding a subject matter) has enjoyed increased attention in mainstream epistemology, especially over the past decade. While the thought that understanding is just a kind of (propositional) knowledge--*viz.*, propositional knowledge of causes--has enjoyed some popularity in the philosophy of science, this view is increasingly falling out of fashion in epistemology. And, in fact, one reason this is so, highlighted by Pritchard (2013) is that achieving understanding plausibly involves a greater exercise of *cognitive agency* than does the attainment of knowledge. Pritchard's (2013) own rationale in defence of this suggestion is that understanding, though not knowledge, *essentially* involves *cognitive achievement*, where cognitive achievement is understood as cognitive success (e.g. true belief) that is primarily creditable to the agent's exercise of cognitive ability or virtue. With reference to this point, Pritchard argues that it is ultimately cognitive achievement, and thus understanding, which is the epistemic goal of education. Pritchard (2014) has expanded on this rationale and has suggested how extra-agential factors can in fact be exploited in order to facilitate, in pedagogical settings, the attainment of understanding. Like Pritchard, Elgin (1999) and Lynch (2014) have reached the conclusion that understanding is by comparison with knowledge an especially worthy aim. Elgin's insight is that teaching should aim to foster not merely positive epistemic standings to true propositions, but that education should seek to bring it about that the student's commitments mesh to form a mutually supportive, independently supported system of thought--an aim that is better understood as one of promoting *understanding* than promoting knowledge. Lynch (2014) reaches the view that understanding is especially valuable by appealing to a kind of 'neuromedia' thought experiment; suppose that the functions of your smartphone are miniaturized to a cellular level and accessible by your neural network. On such a hypothesis, even if it is conceivable that our knowledge can be 'extended' through technological means in such a manner, Lynch suggests understanding by contrast would not come so easy.

Finally, Smith & Siegel (2004) locate understanding, as an educational aim, in a pedagogical setting by exploring the matter of what teachers ought to do when understanding is achieved in the *absence* of belief, as when students purport to understand a theory while not believing the theory.

Elgin, C. Z. (1999). 'Education and the Advancement of Understanding', In *The Proceedings of the Twentieth World Congress of Philosophy*' vol. 3, pp. 131-140).

> Proposes supplanting the assumption that teaching aims at the advancement of knowledge with the view that teaching aims at the advancement of understanding, where one's understanding is holistic and a matter of how one's commitments mesh to form a mutually supportive, independently supported system of thought.

Lynch, M. (2014). 'Neuromedia, Extended Knowledge and Understanding,' *Philosophical Issues* vol. 24, no. 1, pp. 299–313.

> This paper uses a 'neuromedia' thought experiment to explore two questions: (i) to what extent does such technology put pressure on the idea that we might have more than one conception of knowledge; (ii) what is the value of states that fit these conceptions (or types) of knowledge?

Pritchard, D. (2013). 'Epistemic Virtue and the Epistemology of Education', *Journal of Philosophy of Education* vol. 47, pp. 236-47.

> A continuum of cognitive agency is described, on which it is ultimately cognitive achievement, and thus understanding, which is the epistemic goal of education. This is contrasted with a view on which knowledge is the epistemic goal.

Pritchard, D. (2014). 'Virtue Epistemology, Extended Cognition, and the Epistemology of Education', *Universitas: Monthly Review of Philosophy and Culture* vol. 478, pp. 47-66

> Argues that extra-agential factors can in fact be exploited in order to develop, in pedagogical settings, cognitive ability in a way that facilitates the attainment of understanding.

Smith, M. U., & Siegel, H. (2004). 'Knowing, Believing, and Understanding: What Goals for Science Education?', *Science & Education*, vol 13, no. 6, pp. 553-582.

> Provides a rationale for answering the question: what is a teacher to do when confronted with a student who says "I understand that theory (e.g., evolution), but I don't believe it"?.

9 Knowledge, Epistemic Value And Education

A recent trend in mainstream epistemology, especially over the past decade, has been a kind of 'revisionism' about the value of knowledge. The key strand, put forward most notably in Kvanvig (2003) and pursued further in Pritchard (2009), submits a negative and positive thesis. The *negative* thesis that knowledge is not as *epistemically* valuable as ordinarily assumed--that is, that knowledge is not (contrary to pretheoretical intuitions) epistemically valuable in a way that *mere* true belief (or mere Gettiered true belief that falls short of knowledge) is not; the corresponding *positive* revisionist insight is that what *is* distinctly epistemically valuable is understanding, rather than knowledge. This revisionist trend--explored and criticised in detail by contributions to the volume Haddock et al (2009)--has direct implications for normative questions in the philosophy of education, in particularly, by challenging the accounts of the aim of education that give primacy to knowledge acquisition. Such an account has been defended by Almond (2010). Hand (2009), by contrast, engages with a broader question about epistemic value--namely the epistemic value of theoretical *activities*; Hand argues that education is valuable in part because theoretical activity itself (by contrast to the attainment of epistemic states themselves) is valuable.

Almond, B. (2010) 'The Value of Knowledge', in Bailey, R., Barrow, R., Carr, D. and McCarthy, C. (eds) *The Sage Handbook of Philosophy of Education*, London: Sage, pp. 297-306.

> Considers the value of educating for epistemic goods such as knowledge and wisdom. Asks whether the education system should aim to transmit useful or, instead, worthwhile knowledge and defends the value of knowledge in education against sceptical challenges arising from theories of social context and identity.

Haddock, A., Millar, A., & Pritchard, D. (Eds.). (2009). *Epistemic Value*. Oxford University Press.

> Features leading epistemologists on the topic of epistemic value, and in particular, on philosophical problems connected to the value of knowledge.

Kvanvig, J. (2003). *The Value of Knowledge and the Pursuit of Understanding*. Cambridge: CUP.

> This is the *locus classicus* in contemporary epistemology for the thesis that understanding is of greater epistemic value than knowledge.

Pritchard, D. (2009). 'Knowledge, Understanding and Epistemic Value' in *Epistemology* (Royal Institute of Philosophy Lectures), (ed.) A. O'Hear, pp. 19-43, (Cambridge UP, 2009).

Defends a cognitive-achievement rationale for the distinctive epistemic value of understanding

Hand, M. (2009) 'On the Worthwhileness of Theoretical Activities', in *Journal of Philosophy of Education* vol. 43, no. S2, pp.109-121

Defends an instrumentalist argument for the worthwhileness of theoretical activities in the service of justify education, per se.

10 Knowledge-How, Expertise And Education

In Curriculum Studies, one important debate concerns whether the school curriculum should be structured around the transmission of educational content or should focus on inculcating skills (the skills/content debate). Due to the importance of this debate in studying the curriculum, one topic in epistemology that receives particular attention in education is the relationship between knowledge-that and knowledge-how. Within education, the debate takes two forms. Firstly, on the curricular 'macro' level, the question exists whether the curriculum as a whole should be weighted towards theoretical subjects such as history, mathematics, science and literature (content) or vocational subjects such as cookery, carpentry, engineering or accounting (skills). Secondly, on the curricular 'micro' level, it is a question *within* many subjects what is more important to teach – disciplinary content (in history, for instance the causes of the First World War or the consequences of the French Revolution) or disciplinary skills (such as analysis of historical documents or historical writing in the subject history). Understanding what sets apart theoretical- and skills-driven approaches to both these questions naturally invites consideration of the knowing that/knowing how distinction and of the related concept, of expertise. Winch 2009 and Winch 2014 provides an overview of thinking about knowledge how in education and stresses the importance of Ryle's work on knowledge how. Next to the influence of Ryle, Dreyfus and Dreyfus (1986) and its 'novice to expert model' has been influential in shaping educator's views on the development of expertise. Luntley (2009) and Winch (2010) are critical of Dreyfus's account, with Winch (2010) emphasising the importance of both tacit skill and explicit theoretical knowledge to knowledge how. Carter and Pritchard's (2015) exploration of the value of knowledge how is pertinent to the question why knowledge how should be educated for and Kotzee (2014a and 2014b) explores the implications of work on knowledge how and expertise for professional education.

Carter, J.A. & Pritchard, D. (2015). 'Knowledge-How and Epistemic Value', *Australasian Journal of Philosophy.*

Argues that knowledge-how is more epistemically valuable than knowledge-that, and on this basis, suggests that contrary to

reductive intellectualism, knowledge-how is not reducible to knowledge-that.

Dreyfus, H.L. and Dreyfus, S.E. (1986). *Mind Over Machine: the Power of Human Intuition and Expertise in the Age of the Computer*. New York: Free Press.

Ostensibly about the possibility of artificial intelligence, this book became best known in education for Dreyfus and Dreyfus's stage model of the acquisition of expertise. Influential especially for the view – widely accepted in education – that expertise is tacit and cannot be taught explicitly.

Kotzee, B. (2014a). 'Expertise, fluency and social realism about professional knowledge', *Journal of Education and Work*, 27(2), 161-78

Criticises ability- or process-based accounts of expertise in education. Holds that such theories depart from unwarranted scepticism about the possibility of expert knowledge and advocates, in their stead, a social realist conception of expertise.

Kotzee, B. (2014b) 'Differentiating Forms of Professional Expertise' . In Young, M. and Muller, J. (eds) *Knowledge, Expertise and the Professions*. London: Routledge.

Contrasts philosophical, psychological and sociological approaches to expertise. Criticises the influence of Dreyfus's stage model in education and develops an account (drawing on work by Harry Collins) to articulate the importance of explicit and tacit knowledge to different forms of expertise .

Luntley, M. (2009). 'Understanding Expertise'. *Journal for Applied Philosophy*, vol **26** No. 4, pp.356-70

Luntley attacks the view (associated with Dreyfus and others and influential in professional education) that the knowledge of experts is qualitatively different from the knowledge of novices. Holds that what sets experts apart is rather the expert's greater capacity to learn.

Winch, C. (2009). 'Gilbert Ryle on Knowing How and the Possibility of Vocational Education'. *Journal of Applied Philosophy*, vol. 26, no. 1, pp.88-101.

Winch applies and defends a Rylean approach to knowing how in the educational context.

Winch, C. (2010). *Dimensions of Expertise*. London: Continuum.

In this book, Winch discusses approaches to expertise in professional and general education.

Winch, C. (2014). 'Know-how' and Knowledge in the Professional Curriculum'. In Young, M. and Muller, J. (eds) *Knowledge, Expertise and the Professions*. London: Routledge.

Considers, broadly, whether professional education should employ a curriculum that prioritises theoretical knowledge or learning outcomes. Sketches an account of professional education according to which subject knowledge and practical knowledge (or know that and know how) contribute together to 'epistemic ascent' from novicehood to expertise.