

Articulating choice and deliberation in conducting research – researchers ‘working in the interpretive zone’

Harm H. Tillema^{a*}, Lily Orland Barak^b and Juan Jose Mena Marcos^c

^a*Department of Education, Leiden University, The Netherlands;* ^b*Haifa University, Israel;*

^c*University of Salamanca, Spain*

For researchers, committed to a research problem, finding meaningful answers is a process of careful weighting and interpreting what is actually found as an outcome of their mode of inquiry in reference to initial intentions and research goals. Particularly in doing qualitative research in/on teaching researchers have recognised the need to acknowledge the ways in which one’s intentions interact with the process of study, and how they serve to shape research outcomes. Such a recognition calls for attention to working in the interpretive zone (Wasser and Bresler 1996). Based on our own studies on teachers’ reflective expertise, we show how articulation of researchers’ intent and deliberation in designing a study could ameliorate critical subjectivity and reflection while analysing and interpreting accounts of data and clarifying interactions between researcher and their object of study in the construction of knowledge. This lead us to construct a heuristic tool for achieving greater reflexivity in conducting research, which may be utilised, primarily, in programmes aimed at research education.

Keywords: research methods; qualitative research; research work; Phd preparation reflection

Taking position

In the community of education researchers, there is an increased recognition of the researchers’ complex relation with their object of study as well as their personal position in conducting a study (Polkinghorne 2004). As a result of the ongoing epistemological debate (Ercikan and Roth 2006; Siegel 2006) over the last decade, there is a growing awareness of researchers’ collective and distributed ways of knowing and preferred modes of inquiry (Bereiter 2002), along with a recognition of the importance of epistemological diversity in education research. This has led to the erosion of the myth of the lonely researcher and a redefinition of ‘objectivity’ (Day 1998; Hargreaves 1999). The research community has acknowledged more readily that ways in which researchers design and participate in the process of inquiry will shape their interpretation of findings and, to that effect, the study’s outcomes (Wasser and Bresler 1996). As a result, there is a growing appreciation of relevancy among education researchers towards articulating issues of conducting research, since they involve the researchers’ position in creating knowledge and giving legitimacy to inquiry (Siegel 2006). This interest in the conduct of research highlights the importance of researchers’ critical subjectivity while analysing and interpreting

*Corresponding author. Email: tillema@fsw.leidenuniv.nl

accounts of inquiry (Orland-Barak 2002; Reason and Rowan 1981). The renewed attention certainly has to do and is partly rooted in the current debate on 'giving evidence' in research (Chatterji 2004; also Heilbronn et al. 2002; Pring 2000), but more importantly for our argument, also with the researchers' collective effort to build 'object' knowledge, expand ways of knowing, and reach valid interpretations in their domain of study, whether of a qualitative or quantitative orientation. That is, emphasising the researcher's position in conducting research addresses not only the legitimacy or relevancy of the research (i.e., in reference to an outside community) but, more directly, considers the conceptions prevalent in conducting and practising actual research work (i.e., being regulative inside the research community). Taking this last perspective, it implies a call for further exploration and articulation of the researcher's construction of interpretations from research findings (Lather 1995) and clarification of how researchers in the conduct of their inquiry link the object of study with process and design of research (Mosteller 2006).

The complex relation between the researcher's object of study and mode of inquiry is in essence rooted in the subjective process of interpretation, i.e., recognising the researcher's personal stance in the process of understanding the phenomenon inquired, and positioning research outcomes, as a result of the selected design and methodology (Sun and Ousmanou 2006). Interpretations are unavoidably 'shaped by the linguistic and cultural resources the interpreter already possesses' (Moss 2005, 266; Siegel 2006) and by the nature of questions the interpreter/researcher brings to the data. In the community of education researchers, it is increasingly being recognised that erasing personal perspectives on (both object and mode of) research is not the issue (Erickson and Gutierrez 2002; Feuer, Towne, and Shavelson 2002). Rather these notions are substituted by explication and authenticity (McCall and Green 2004). Interpretation (Gadamer 1994), therefore, is most productively conceived as a conversation between two partners who are trying to come to an understanding about the object of study (being an involved vs. a lonely researcher) (Warnke 1994).

Against this argumentative background, this paper explores possible difficulties researchers may be confronted with while conducting a study and interpreting its findings, as related to their involved position and their preferences regarding their object of study and modes of inquiry. Specifically, it casts light on potential controversial issues that might emerge in this interpretative process, to arrive at a proposed heuristic for scrutinising research work.

It is increasingly shared that researchers inquire in many different ways and that a researcher's personal position and held conceptions (both with regard to object of study as well as epistemology) operate to shape this process of inquiry.¹ Wasser and Bresler (1996) proposed the notion of 'working in the interpretive zone' to denote the realm of linking the object of study to the researcher's position and preferences. Here this term is used to indicate the arena where intention and deliberation take place to shape the process of collecting, analysing and interpreting research. In the interpretive zone, a researcher brings together different kinds of knowledge, experience, conceptions, and beliefs to forge new meanings that bring significance to findings (Goodman 1978; also Martin, Craft, and Tillema 2002; Orland-Barak and Tillema 2007). This 'intentional shaping of reality' becomes evident during the process of inquiry within which the researcher(s) is (are) engaged but is already formed beforehand during the design and conceptualisation of a study. A

researcher's search for knowledge (Saloman 1991), consequently, is closely aligned with an endorsement and eagerness to realise conceptions. In each particular study, a researcher enters a territory with theory (i.e., expectations, conceptions and intentions) (Gadamer 1994) in 'a search for local meanings which seeks to describe, analyse, and interpret features of a studied object, preserving its complexity and understanding it from the perspectives of participants' (Borko, Liston, and Whitcomb 2007, 4). Subsequently, researchers seek to identify positive connections between adhered conceptions to their observations while conducting the research. Or, as Yanchar and Williams concisely stated (2006, 4), 'If a method were not based on certain assumptions about the phenomena to be investigated, it would not possess the unique characteristics required to study them'.

A critical understanding of the process of conducting research and an awareness of how research questions and study designs are inherently interconnected to produce knowledge would help to explicate how 'findings' come to shape and gain meaning (Buskes 1998; Eisenhart 2005). Such a critical stance could spell out some of the many intricacies of doing research. Scrutinising this working in the interpretive zone, that is linking the researcher position to the object of study, would encompass at least three domains: (1) the evolution of *research questions* during a study: i.e., advancing from questions of goals to questions of process, to questions of outcomes; (2) the evolution of *research methodology* via construction of a research design and selection of research tools (within either a qualitative paradigm, a quantitative paradigm, or methods pluralism) to a determination of in(ex)clusion of data for interpretation; and (3) the evolution and transformation of the *underlying theoretical constructs*: starting from personal notions on objectified knowledge (i.e., 'out there') to conceptions of 'situational understandings' i.e., interpreting outcomes as 'constructed' in reference to the participants involved (Bereiter 2002; Clark 2002). These three domains in the interpretive zone mirror work by Thomas and Pring (2004) following up on Toulmin's (2003) argumentation on the nature of evidence produced by research. With respect to (1)–goals—they refer to the origination or background of evidence, i.e., the ideology, goals and set of values that give credence to the research claim. As to (2)–methods—they refer to warrant, i.e., the research method/means employed to gain evidence, and with respect to (3)–constructs—they refer to the weight of evidence based on conceptual interpretations given to the evidence. According to Thomas and Pring, these domains denote the subjective part of doing research as they plead for explication, i.e., minimise bias.

Researchers are confronted with many dilemmas in each of these three domains. To exemplify these processes of choice and deliberation while conducting a study, a critical example will be given for each of these three domains in which researchers have shown different routes to explicate their meaning making in appreciating their data.

(1) Evolving research questions

Through *critical appraisal* of their own research collaboration Orland-Barak and Tillema (2007) took their own study (Tillema and Orland-Barak 2006) and analysed on-going written correspondences and documented conversations, and (re)examined their joint interpretations as co-researchers as they operated during their study to interpret their findings. Their retrospective account of dealing with data

(Orland-Barak and Tillema 2007) specifies how researchers construct knowledge and arrive at a shared understanding collaboratively as a way of conceptualising interpretation from findings. Specifically, in their re-examination, they articulated the similarities and differences in each of the researchers' backgrounds and diversity of research perspectives. Their account showed how intellectual, social, interpersonal, and dispositional aspects of researcher collaboration affected their study and how it operated to shape conceptual understandings about the object of study, about research methodology, and about theoretical insights that emerged from their study.

These authors mention three dilemmas that functioned in the interpretive zone, which were conceptualised as dyads: (1) continuity and discontinuity as related to researchers' commitment and self-organisation; (2) reciprocity and trust as related to interpersonal dispositions; and (3) intersubjectivity and exchange as related to issues of meaning negotiation within competing research traditions. According to these authors, knowledge construction can easily fail in each one of these dyads (mismatched beliefs, lack of commitment, absence of conceptual change, and substitution of hands-on activity for conceptual exchange).

(2) *Evolving research methods*

Through *exchange and sharing* of experiences while being involved in research projects, Ponte (2005) explicated how participants informed each other about how their conceptions as they evolved by shared attributing significance to findings. She describes a practitioner action research project in which a research-based culture was implemented at a postgraduate programme for Inclusive Education. Practitioner research, includes action research, participatory action research, self-study, and teacher research and aims to understand human activity in situ and from the perspective of participants (Borko, Liston, and Whitcomb 2007). To achieve their aim, a Master's course was developed in which practice-based research projects were conducted jointly by teacher educators, teachers and graduate students. Based on sharing ideas and discussing each others findings through 'interactive professionalism' (Fullan and Hargreaves 1991) participants exchanged among themselves overlapping reflexive and reciprocal practices, thus creating space for a collaborative research community. Their mutual research activity and joint inquiry into the nature of their findings gave rise to increased understanding of their object of study and the tools through which knowledge is constructed. It consisted of several routes, or modes, of inquiry:

- (1) action research, i.e., use of experiences throughout the course programme as a constant theme.
- (2) self-study, i.e., queries in order to understand and transform one's teaching and facilitation of practice;
- (3) reflective inquiry, i.e., interpretation, construction and/or refinement of educational concepts and pedagogical approaches.

This reciprocity in doing research, i.e., alternating between practice and theory, and shifting perspectives between participants, scaffolded greater reflexivity, not only with respect to understanding practices but also change and implementation of new practices.

(3) *Evolving constructs*

The route of *dialectical reflexivity* was taken by Rust and Zeller Mayer (2005) to understand their position as researchers in reference to their object of study. In interpreting their collaborative research study they started from the notion of taking one's own interpretations of events as 'data' to be subjected to further examination (Winter 1989). Based on Elliott's idea (Elliott 1985, 1993) of 'second-order' action research, they adopted a critical stance towards their own work which could facilitate the work of other participants in their study. Second-order action research becomes a place in which analysis and reflection around the problems of practice are being met through a process of sustained sense making. Rust and Zeller Mayer describe such a collaborative process of inquiry, in which the researcher and the participants, representing different roles, share their differing perspectives to recognise the existence of alternative rationalities, become aware of the limitations of his/her immediate interpretations, and, consequently, change their conceptions on the object of study and possibly their practice.

These examples may illustrate how researchers' critical stance towards their involvement in a study creates a space in which connections are made between intentions and their enactment or realisation in research practice. It signifies that researcher perspectives have an impact on actual research practice² and may highlight the conduct of research on issues like: (1) in what manner is knowledge construction shaped by the way research is carried out: i.e., from research question to research method and design; and (2) how arrangement of the research process become manifest in the interpretation of research findings; i.e., from research design to research outcomes. These intricate relations between the researchers' position and their object of study call for attention to explication and articulation of how researchers unravel the relation between research intention and its realisation in research practice.

Deliberation and choice in conducting a study

An increased awareness of the researcher's choice and deliberation in conducting a study, may articulate issues of reflexivity as they present themselves during the process of interpreting data. Taking our own studies on teachers' reflective expertise (Mena Marcos and Tillema 2006; Tillema and Orland-Barak 2006) for scrutiny, we illustrate how such realisations of researchers' intentions and goals are carried out and how it could foster critical subjectivity. In drafting specific dilemmas in analysing and interpreting accounts of teaching we show how a researcher's stance and values become 'embodied in the data'. By contrasting researcher's intentions, as made manifest in their research design, and subsequent interpretations of data or 'findings', we suggest a conceptual figure-ground perspective that points out ways in which researchers have constructed knowledge from inquiry. Table 1 presents a generic framework of potential controversial issues while working in the interpretive zone.

The framework considers critical issues related to data handling as they present themselves at the various stages of research design. Specifically, it suggests criteria for discerning choices of whether to include or exclude data for interpretation as well as decisions regarding a particular focus for the study design. These issues condense

Table 1. Framework of controversial issues while working in the interpretive zone.

		data	
		Selected / relevant	Not selected / obsolete
The intentional	focusing	Telling more than we can know 'overstretching'	Telling only half the story 'undervaluing'
	dismissing	Ignoring what matters 'brushing aside'	Overlooking what counts 'creating a blind spot'

into four controversial zones that represent prototypical pitfalls while interpreting the findings of a study and for which a researcher needs to caution:

- (A) 'Telling more than we can know', alludes to being deliberately focused on intended outcomes and in doing so 'overstretching' or magnifying their relevance in comparison to the strength of data or collection methods used. This could consequently lead to overstretching the significance of findings.
- (B) 'Telling only half the story' pertains to 'undervaluing' certain data, thus intentionally disregarding possibly interesting findings. It represents a deliberate disregard of data available in a study.
- (C) 'Ignoring what matters' suggests unintentional dismissal of findings as irrelevant or not noticing what is important; thereby 'brushing aside' what counts as relevant.
- (D) 'Overlooking what counts' may reflect a degree of unawareness or inattentiveness on part of the researcher, leading to 'blind spots' in the conceptualisation of relevant data.

These prototypical controversies may harm or impede knowledge construction in a domain of study.

The diverse range of conceptual and methodological perspectives that portray the scholarship of teacher reflection, makes the field particularly appropriate for illustrating the intricate process of constructing knowledge in the interpretative zone. Examining such studies within the above framework would imply looking at the ways in which researchers arrive at constructing a grounded knowledge base and into the processes by which educational researchers build on each others' knowledge to interpret new findings.

Taking one study in particular (i.e., our own study on teacher reflective beliefs on knowledge and knowing – Tillema and Orland-Barak 2006)³ we describe the notion of ‘working in the interpretive zone’ in particular, i.e., as a way of conducting research that shape understandings (a) about the goals and intentions of the study; (b) about the research methodology; and (c) about the theoretical insights that emerge from the study (Orland-Barak and Tillema 2007).

The Tillema and Orland-Barak study was intended to link teachers’ personal epistemological beliefs (perceptions about knowledge and knowing) to what teachers actually accept from their colleagues as grounded knowledge while participating in a collaborative learning experience, i.e., a study team. The research project focused on the study team intervention to foster exchange and inquiry within differently organised teams of teachers who worked together to produce concrete artefacts for their daily teaching. Several research methods were applied (Table 2) to capture the process of exchange and learning, and data was analysed with respect to the influence of prior epistemological beliefs on evaluations of knowledge productivity (i.e., learning for practice) by the teams. It was presumed that a multiple- or mixed-method approach (Johnson and Onwuegbuzie 2004 – see, however, Section **Towards a heuristic while working in the interpretive zone**) was needed to portray the impact of beliefs on learning in teams in a coherent and authentic way, doing justice to the perspectives of participants (Borko, Liston, and Whitcomb 2007).

The main findings of the Tillema and Orland-Barak study with respect to the impact of epistemological beliefs on knowledge production in teams can be summarised as follows:

- (A) Individual epistemological beliefs about knowledge and knowing are not univocally related with evaluations of attained outcomes in knowledge construction in teams.

Table 2. Research design of Tillema and Orland-Barak’s (2006) study.

Construct	Teachers’ beliefs about knowledge and knowing	Teachers’ process accounts of learning experiences	Teachers’ representation of memorable learning events	Evaluation of knowledge productivity in teams
Instrument	Questionnaire on knowledge and knowing	Team member logbooks	Memorable events interview	Evaluation rating scale on:
Variables	Reflective, situated transformative	Personal narrative accounts on process	Retrospective evaluation of key experiences in learning	– problem understanding – perspective shift – commitment to implementation
Intervention: (mediation)	Study team: working collaboratively in practice			

Note: Arrows represent hypothesised dependencies.

- (B) Memorable events about what is learned do accord with positive evaluations of exchange in professional conversations.
- (C) When different teams are compared; those members who display a ‘constructivist’ belief on knowledge are also more open to ideas advanced by other professionals.
- (D) In addition, those who hold constructivist beliefs exhibited a strong drive to learn from others.

Arriving at the above conclusions entailed an intricate process of negotiating often conflicting research agendas, given the fact that each researcher abided by a different methodological paradigm (Orland-Barak and Tillema 2007). The conflicts that emerged from collaboration represent the arena of choice and deliberation in the interpretative zone. Specifically, these conflicts involved at least three domains in which intent and resolution operated and interacted. Table 3 illustrates these conflicts, highlighting the key issues involved in the interpretation of research findings.

Each of the domains reveals several intricacies in the study’s outcome that call for deeper examination. For instance: On the one hand team members voiced several concerns about the process of exchange (using logbooks), such as: ‘not every one contributed’; ‘there were too many ideas expressed’; ‘some ideas were good but some were not’. On the other hand, using memorable events it was positively noted that although too many voices were present, richness of ideas came into play which opened new discussions and led to outcomes that really counted. We can make sense of this discrepancy by turning to the suggested framework (see Table 1): The four zones can operate as interpretative lenses to make new sense of the complexities between findings and across instruments (Table 4).

Each of the four controversial zones in Table 4 invites more in-depth interpretative queries with regard to data management. Attending to these controversies could make us aware of: too easy theorising, hidden relations, unnoticed dependencies, or neglected data. As a framework, its prime function is to caution the researcher by highlighting possible flaws or omissions in the analyses and interpretations of the study. As a result of such a scrutiny, data may again be gauged, especially with respect to, in this case, team differences regarding process and content of conversation.

Table 3. Controversial issues in three domains of interpreting research findings.

Research interpretations that shape research findings with respect to:	As present in the study of Tillema and Orland-Barak (2006)
(1) Questions: the goals and intended outcomes of the study.	Is there an univocal and clear-cut relation between individual beliefs and team learning?
(2) Methods: the research methodology and design.	How can process be accounted for in team discussion?; and are tools sensitive enough to detect belief change?
(3) Constructs: the theoretical insights that emerge or are revisited from the study.	Is the construction of distinct belief types valid? Are the outcome measures valid for gauging knowledge productivity?

Table 4. Framework applied to the study by Tillema and Orland-Barak (2006).

Telling more than we can know =	Telling only half the story =
<ul style="list-style-type: none"> – attending to connections between beliefs and accounts of process – attending to links between accounts of process and outcome criteria 	<ul style="list-style-type: none"> – attending to variety between teams – attending to variance between sessions – attending to content of discussion
Ignoring what matters =	Overlooking what counts =
<ul style="list-style-type: none"> – attending to the nature of exchange and debate in teams – attending to the social dynamics of learning in teams – attending to mandated or self-organised teams 	<ul style="list-style-type: none"> – attending to individual diversity and contributions – attending to framing of the setting – attending to familiarity between members of a team – attending to role of the researcher

Towards a heuristic while working in the interpretive zone

In our search for a heuristic to facilitate work in the interpretative zone, we propose some generic principles that can serve as guidelines for monitoring researchers' work in the interpretive zone. Appendix 1 summarises them as guiding questions, for each of the four identified controversial zones to sustain an in-depth inspection of the strengths and weaknesses in researchers' interpretations within a particular study. We are cautioned, however, not to impose a set of predetermined principles, given the epistemological diversity in the field (Siegel 2006). As Moss (2005, 280) would contend: 'it seems at least premature, and perhaps ultimately counterproductive, to work toward a statement of principles of scientific quality intended to apply across diverse communities'. With these considerations in mind, we view a heuristic as a depiction of possible quality criteria to deal with and explicate a researcher's intentions in the process of doing research, making a particular study less vulnerable to implicit interpretations. In this sense, it offers a set of practical guiding questions as regulative queries for conducting research. Each of these is formulated as a specific criterion to evaluate research interpretations drawn from the research data. Designed as a set of criteria, the heuristic framework might function as an appraisal scheme to uncover controversial or problematic issues while working in the interpretive zone. These criteria stress warranty of research claims in relation to goals; critical inspection of data for methods, and heightened conceptual awareness for constructs. The heuristic's overall purpose is to scaffold awareness in research work, i.e., understanding data from the perspective of the study's goal and the researcher's intentions. A key assumption behind it is that it is that *the researcher* gives meaning to the data (not methodological tools or analyses by themselves) and this implies a commitment to an epistemological stance, i.e., research design and methods are not indifferent to research outcomes and interpretations (Roberts 2007). Put otherwise, a study object or goal 'neutral' mixed methods position (see Johnson and Onwuegbuzie 2004) underrates choice and deliberation in the selection, deployment, and appreciation of research methods and research design. The

importance of research, therefore, is 'search', which is both meaningful and intentional. A compatibility thesis, Yanchar and Williams (2006), which holds that methods and research design are disengaged from research goals and can be mixed in any way as long as it 'works', denies a purposeful and grounded approach to the object of study as well as a conceptual driven background of inquiry. In short, working in the interpretive zone presumes an 'intelligent design' of research, and not merely an implicit consideration about (in)compatibility of methods (Yanchar and Williams 2006).

For the heuristic to be functional it will have to deal with demands posed by the process of doing research. Experienced researchers might already have gained throughout their studies an (more often implicit) awareness of questions such as raised in the heuristic (Zeichner 2005; Manning 1997). And although the heuristic might gain its inquisitive position in their activity as well (Ozga 1998), its main function and purpose might better be placed in the preparation and education of beginning research workers (i.e., in PhD and EdD research programmes). Since the heuristic as a tool is intended to achieve greater reflexivity it could help doctorates and their mentors to highlight matters of conducting research at a more explicit level (Shulman et al. 2006). More precisely, the questions put forward in the heuristic might structure the conversation between a mentor and mentee and bring it up to a level of explicitness and parity that could promote a constructive and formative progression in research work. Problems in research education of doctorates are known to be substantial (Shulman et al. 2006) not in the least with regard to the construction of knowledge and reflexivity and in selecting and interpreting modes of inquiry (Sfard and Prusak 2006). The heuristic then could come to aid by specifying and offering questions to encourage assessment of plans and critical reflexion and deliberation to refine research actions. There have been collected some experiences (still limited) with such an application of the device in doctorate programmes. Doctorate students value it as a tool for a number of reasons, which sometimes depart from its intended main aim of reaching greater reflexivity: (a) 'it specifies areas to walk through to while setting up a study' (not an intended function, since it is meant not to restrict research design); (b) 'it is a guideline to check whether you are on the right track' (also a not intended function which points to a possible misuse of the heuristic as a checkbox approach to research); (c) 'it made conversation with my supervisor more focused' (an intended purpose); (d) 'it is a device, when closely monitored, to make one constantly aware of drawbacks and pitfalls in interpreting findings from your study' (in this case the abbreviated four cells were meant, not the full version). In general, it is noted that the heuristic offers a wider perspective and profound comprehension of the whole research process which may increase the young researcher's feeling of control and it may reduce the sensation of feeling lost (which is quite common when conducting a thesis or dissertation – Shulman et al. 2006). Also some experiences collected from supervisors in doctorate programmes point to an interesting feature of the device; it was noted that, more than without such a device, it is now possible to monitor research competence areas of doctorate students by assessing the solutions in research design and modes of inquiry the doctorate students have found for themselves.

As another domain of utility, the heuristic would probably be valuable in practitioner research as well (Ponte et al. 2004; Yorks 2005) since its purpose of reaching greater reflexivity coincides with the aims of gaining understanding of one's

practice as professionals, as well as building a community of learners which both are prominent in practitioner research (Eisenhart 2005; Thomas et al. 1998). In this case, the heuristic's main function could be to structure conversation and deliberation processes between collaborating professionals and help practitioners to build their new roles of researchers through research practitioners networks (Putnam and Borko 1997; Zeichner 2005) which, then, may allow them to follow different threads or routes of reflexive reasoning. For instance, a route may be to pursue questions in one domain more explicitly: i.e., either questions, or methods, or concepts. Another route could be to keep track of the 'telling more than we can know' pitfall or 'overlooking what matters' across domains of reflexivity. These routes may function to create communicative space to analyse, evaluate and even modelling practices based on the collected data from research. In this way, analysing practice and conducting research could become better aligned in practitioner research (Borko 2004; Feldman et al. 1998).

The challenge of working in the interpretive zone is the exploration and careful consideration of findings in reference to the aims and modes on inquiry; it would be considered a gain if not only conceptual awareness but argumentative conversation could be established through a (flexible) use of deliberate queries that would help researchers not to jump too easily to conclusions.

Notes

1. This notion of diversity does not merely refer to the (proper) use of a wide variety of methods and techniques that researchers may select to do their research which is driven by how researchers conceive themselves as either adhering to a quantitative or qualitative methodology (Ercikan and Roth 2006) but refers to conceptions of knowing and knowledge (i.e., epistemology) with which a researcher tries to understand the object under study.
2. This argument refutes the notion that researchers are technicians applying research tools that 'produce' research findings without any involvement or choice and deliberation on part of the researcher. Such a reification of tools would deny intent and goal or meaning seeking in research.
3. Scrutinising one's own study has the advantage of having at one's disposal relevant in-depth research material but also may fall victim to one of the dilemmas identified, i.e., blind spot.

References

- Bereiter, C. 2002. *Education and mind in the knowledge society*. Mahwah: Lawrence Erlbaum Associates.
- Borko, H. 2004. Professional development and teacher learning. *Educational Researcher* 33, no. 8: 3–16.
- Borko, H., D. Liston, and J.A. Whitcomb. 2007. Genres of empirical research in teacher education. *Journal of Teacher Education* 58, no. 1: 3–11.
- Buskes, C. 1998. *The genealogy of knowledge; a Darwinian approach to epistemology and philosophy of science*. *Studies in general philosophy of science*. Tilburg: Tilburg University Press.
- Chatterji, M. 2004. Evidence on 'what works', an argument for extended term mixed method evaluation designs. *Educational Researcher* 33, no. 9: 3–14.
- Clark, C.M. 2002. New questions about student teaching. *Teacher Education Quarterly* 29, no. 2: 77–80.

- . 1999. Professional development and reflective practice: Purposes, processes and partnerships. *Pedagogy, Culture and Society* 7, no. 2: 221–33.
- Eisenhart, M. 2005. Hammers and saws for the improvement of educational research. *Educational Theory* 55, no. 3: 245–61.
- Elliott, J. 1985. Facilitating educational action-research: Some dilemmas. In *Field methods in the study of education*, ed. R. Burgess. London: The Falmer Press.
- . 1993. Academics and action research: The training workshop as an exercise in ideological deconstruction. In *Reconstructing teacher education, teacher development*, ed. J. Elliott. London: Falmer Press.
- Ercikan, K., and W.-M. Roth. 2006. What good is polarizing research into qualitative and quantitative. *Educational Researcher* 35, no. 5: 14–24.
- Erickson, F., and K. Gutierrez. 2002. Culture, rigor, and science in educational research. *Educational Researcher* 31, no. 8: 21–4.
- Feldman, A., M. Alibrandi, E. Capifali, D. Floyd, J. Gabriel, B. Henriques, J. Lucey, and M. Mera. 1998. Looking at ourselves look at ourselves: An action research self-study of doctoral students' roles in teacher education programs. *Teacher Education Quarterly* 25, no. 3: 5–28.
- Feuer, M.J., L. Towne, and R.J. Shavelson. 2002. Reply to commentators on scientific culture and educational research. *Educational Researcher* 31, no. 8: 28.
- Fullan, M., and A. Hargreaves. 1991. *What's worth fighting for in your school?* Toronto: Ontario Public School Teachers' Federation.
- Gadamer, H.G. 1994. *Truth and method*. New York: Seabury.
- Goodman, N.J. 1978. *Ways of worldmaking*. Indianapolis, IN: Hackett.
- Hargreaves, A. 1997. *Changing teachers, changing times; teachers' work and culture in the postmodern age*. London: Cassell.
- Heilbronn, R., C. Jones, S. Bubb, and M. Totterdell. 2002. Schoolbased induction tutors, a challenging role. *School Leadership & Management* 22, no. 4: 34–45.
- Johnson, R.B., and A.J. Onwuegbuzie. 2004. Mixed method research, a research paradigm whose time has come. *Educational Researcher* 33, no. 7: 14–26.
- Lather, P. 1995. The validity of the angels: Interpretive and textual strategies in researching the lives of women with HIV/AIDS. *Qualitative Inquiry* 1: 41–68.
- Manning, K. 1997. Authenticity in constructivist inquiry. *Qualitative Inquiry* 3, no. 1: 93–116.
- Martin, D.S., A.R. Craft, and H.H. Tillema. 2002. International collaboration: Challenges for researchers. *Educational Forum* 66, no. 4: 356–65.
- McCall, R.B., and B.L. Green. 2004. Beyond the methodological gold standard of behavioral research: Considerations for practice and policy. *Social Policy Report* 18, no. 2: 3–19.
- Mena Marcos, J., and H. Tillema. 2006. Studying studies on teacher reflection and action: An appraisal of research contributions. *Educational Research Review* 1, no. 2: 112–32.
- Moss, P.A. 2005. Understanding the other/understanding ourselves: Toward a constructive dialogue about principles in educational research. *Educational Theory* 55, no. 3: 263–83.
- Mosteller, T. 2006. *Epistemological relativism, Macintyre, Putnam & Rorty*. London/New York: Continuum Press.
- Orland-Barak, L. 2002. Theoretical sensitivity: Unpacking a complex construct. *Reflective Practice* 3, no. 3: 264–78.
- Orland-Barak, L., and H.H. Tillema. 2007. Researchers' construction of knowledge from studying professional conversation groups: Reflections on the interpretive zone. *Educational Forum* 71, no. 4: 361–72.
- Ozga, J. 1998. The entrepreneurial researcher: Re-formations of identity in the research marketplace. *International Studies in Sociology of Education* 8, no. 2: 143–53.
- Pring, R. 2000. *Philosophy of educational research*. London: Continuum press.
- Polkinghorne, D.E. 2004. *Practice and the human sciences; the case for a judgement-based practice of care*. Albany, NY: State University of New York Press.

- Ponte, P. 2005. Reciprocal relationships between first and second-order action research in a post graduate school of education: A case in researcher reflexivity. Paper presented at The American Educational Research Association meeting, April 5–10, in Montreal.
- Ponte, P., J. Ax, D. Beijaard, and T. Wubbels. 2004. Teacher's development of professional knowledge through action research and the facilitation of this by teachers educators. *Teaching and Teacher Education* 20: 571–88.
- Putnam, R.T., and H. Borko. 1997. Teacher learning: Implications of new views in cognition. Vol. II of *International handbook of teachers and teaching*, ed. B.J. Biddle, T.L. Good, and I.F. Goodson, 1223–96. Dordrecht/Boston/London: Kluwer Academic Publishers.
- Reason, P. and J. Rowan, eds. 1981. *Human inquiry: A sourcebook of new paradigm research*. Chichester: Wiley.
- Roberts, P., 2007. Neoliberalism, performativity and research. *Review of Education* 53: 349–65.
- Rust, F. and M. Zellermyer. 2005. Constructing dialectical reflexivity through second-order action research. Paper presented at The American Educational Research Association meeting, April 5–10, in Montreal.
- Saloman, G. 1991. Transcending the qualitative–quantitative debate: The analytic and systemic approaches to educational research. *Educational Researcher* 20, no. 6: 10–8.
- Sfard, A., and A. Prusak. 2005. Telling identities, in search of an analytical tool for investigating learning as a cultural shaped activity. *Educational Researcher* 34, no. 4: 14–22.
- Shulman, L.S., C.M. Golde, A. Conklin, and K.J. Garabedian. 2006. Reclaiming education doctorates: A critique and a proposal. *Educational Researcher* 35, no. 3: 25–32.
- Siegel, H. 2006. Epistemological diversity and education research, much ado about nothing much? *Educational Researcher* 35, no. 2: 3–13.
- Sun, L., and K. Ousmanou. 2006. Articulation of information requirements for personalized knowledge construction. *Journal of Requirements Engineering* 11: 279–93.
- Thomas, G., and R. Pring, eds. 2004. *Evidence-based practice in education*. Maidenhead: Open University Press.
- Thomas, G., S. Wineburg, P. Grossman, and S. Woolworth. 1998. In the company of colleagues, an interim report on development of a community of teacher learners. *Teaching and Teacher Education* 14: 21–32.
- Tillema, H.H., and L. Orland-Barak. 2006. Constructing knowledge in professional conversations; the role of beliefs on knowledge and knowing. *Learning & Instruction* 16, no. 6: 1–17.
- Toulmin, S. 2003. *The uses of argument*. Cambridge: Cambridge University Press.
- Warnke, G. 1994. *Justice and interpretation*. Cambridge, MA: MIT Press.
- Wasser, J.D., and L. Bresler. 1996. Working in the interpretive zone, conceptualizing collaboration in qualitative research teams. *Educational Researcher* 25, no. 5: 5–16.
- Winter, R. 1989. *Learning from experience: Principles and practice in action-research*. London: Falmer Press.
- Yanchar, S.C., and D.D. Williams. 2006. Reconsidering the compatibility thesis and eclecticism, five proposed guidelines for method use. *Educational Researcher* 35, no. 9: 3–12.
- Yorks, L. 2005. Adult learning and the generation of new knowledge and meaning: Creating liberating spaces for fostering adult learning through practitioner-based collaborative action inquiry. *Teachers College Record* 107, no. 6: 1217–44.
- Zeichner, K.M. 2005. A research agenda for teacher education. In *Studying teacher education: The report of the AERA panel on research and teacher education*, ed. M. Cochran-Smith and K. Zeichner, 737–59. Mahwah, NJ: Lawrence Erlbaum.

Appendix 1: Heuristic to resolve issues of working in the interpretive zone

With regard to	A study's vulnerability can be scrutinised with respect to	
Questions: goals and intended outcomes of a study	<i>Telling more than we can know:</i> Do conclusions represent the outcomes of a study Criterion: data representation	<i>Telling only half the story:</i> Do conclusions and goals of a study match Criterion: goal correspondence
	<i>Ignoring what matters:</i> Do any findings seem incompatible with intended outcomes/goals Criterion: compatibility	<i>Overlooking what counts:</i> Are there any salient emergent findings found, irrespective of goals Criterion: creativeness
	<i>Telling more than we can know:</i>	<i>Telling only half the story:</i>
Methods: research methodology and design of a study	Do selected methods warrant conclusions Criterion: accountability	Do selected methods over/underrate outcomes Criterion: appropriateness
	<i>Ignoring what matters:</i> Does research design cover the object of study coherently Criterion: coherence	<i>Overlooking what counts:</i> Does research design authentically measure the object of study Criterion: domain relatedness
	<i>Telling more than we can know:</i>	<i>Telling only half the story:</i>
Constructs: theoretical insights that emerge from a study	Do (revised) constructs build on and relate to the study's data Criterion: cohesiveness	Are insights taken from the study warranted Criterion: warrant
	<i>Ignoring what matters:</i> Are insights from the study's data ignored Criterion: truthfulness	<i>Overlooking what counts:</i> Are (revised) constructs taken from the study carefully scrutinised Criterion: scrutiny