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Eugene Matusov

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REGULAR ARTICLE

Examining how and why to Engage Practitioners from across the Learning Landscape in the Research Enterprise: Proposal for *Phronêtic* Research on Education

Eugene Matusov[1]

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Abstract Educational practitioners are often reluctant, if not actively resistant, to their participation in production and consumption of educational research. Based on my research experience with educational practitioners, I try to deconstruct this phenomenon using dialogic Bakhtinian and Aristotelian sociocultural frameworks. I consider two major related breakdowns in the educational practice: 1) a lack of self-correcting process in the educational practice, while reliance on accountability policy to achieve the practice quality, and 2) a breakdown between educational research and educational practice. I argue that the first breakdown is caused by viewing teaching as *poiesis*, aiming at preset curricular endpoints, and not as *praxis*, critically defining its own values, goals, and virtues. As to the second breakdown, I argue that current mainstream and even innovative research is defined through the *technê* and *epistêmê* ways of knowing, which correspond to a *poiesic* vision of educational practice. I suggest that educational practice primarily involves the *phronêtic* and *sophic* ways of knowing, which correspond to a *praxis* vision of educational practice. I describe *phronêtic* research of teaching through a case of my students, preservice teachers, working on revisions of their lessons that they conducted at an urban afterschool program. Finally, I consider recommendations for institutional support for *phronêtic* research on teaching.

Keywords Agency · Standards · *Poïesis* · Praxis · *Technê* · *Epistêmê* · *Phronêsis* · Sophia · Dialogue · Self-correcting practice · Bakhtin · Aristotle

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✉ Eugene Matusov
ematusov@udel.edu

[1] University of Delaware, Newark, DE, USA

Let me start this conceptual paper with a personal anecdote. I have to visit many different doctors both for my own health and the health of my parents. I have noticed that many of these doctors have journals on medical research on their desks and bookshelves in their offices. Sometimes during my visits, these doctors have referred to or even shown me some relevant articles from these journals when we discussed my own or my parents' health issues.

In contrast, for the past 20 years, I have visited many teachers, both conventional and especially innovative, and I have never seen educational research journals or books in their classrooms or offices. When I asked many of them if they read educational research literature, they frankly admitted that they did not, often explaining this to me as a lack of time but, when pushed, they often elaborated that they found educational research mostly irrelevant for their daily practice and inaccessible (as they remember educational research from their college years). An old study comparing teachers and educational researchers revealed that although teachers view educational research as credible, they based their professional decision making more on their peers' views and their own observation and reasoning, rather than on findings of educational research (Murray 1970). As one math teacher reported, "[Educational research] is too broad…. It's not being helpful to me in my class."

On the other hand, these teachers were often interested in discussions with me of their own teaching practices, education in general, and the current educational policies and their consequences. In my discussions with innovative teachers, I could hear the teachers referring to pedagogical reflective scholarship by innovative educational practitioners such as Neill (1960), Holt (1972), Greenberg (1992), Paley (1992), Dyson (1997), Gruwell (Freedom Writers and Gruwell 1999), and so on. Some innovative teachers definitely read this literature on their own (despite being busy!). I have also heard their references to Dewey, Piaget, Montessori, Vygotsky, Freire, and research on brain science but, as these teachers admitted to me, it was mostly second-hand references.

In sum, unlike medical doctors, teachers often find educational research not very important, interesting, relevant and accessible for them, which seems to be a rather long trend noticed by many scholars (e.g., Cochran-Smith and Lytle 1993; Jackson 1968). Of course, there seem to be teachers who do their own educational research with or without professional educational researchers, but there seem not to be very many of them. In my view, the issue is not about teachers being busier or lazier than medical doctors, but rather goes deeper into the nature of disjuncture between and incompatibility of educational practice and educational research.

On the other hand, there has been increasing call and pressure from educational academia, business, and politicians to make teaching research-based, as a part of educational reforms to make educators accountable for the quality of their own teaching practice. In the same way that I, myself, started this paper above, the medical profession is often compared with teaching and used as a model for teaching (Hargreaves 1996). The difference, however, is that within the medical profession medical research has been organically accepted by medical professionals whereas in education, educational research does not seem to be organically and voluntarily demanded and consumed by many educators. As a result, educational research has been sliding more and more into a dictatorial position of authorities commanding educational practitioners how they must teach without the authorities ever seeing students with whom these educational practitioners work.

Instead of immediately jumping on an inquiry of how to fix the situation – i.e., how to make educational practitioners active and eager consumers and producers of educational research, − I want to examine here the specificity of institutionalized educational practice, specificity of educational research practice and their relationships. Then I want to discuss the relationship between educational practice and research. Are they compatible? Do they really need each other?

Internal Breakdown of Institutionalized Educational Practice: Education 1.0 Vs. Education 2.0

Above, I briefly described a breakdown between educational practice and educational research. Academic researchers produce research that educational practitioners do not want to consume. However, arguably this is not the major breakdown in the institutionalized educational practice but rather secondary, following and resulting from the major breakdown. I argue that the major breakdown is the absence of a self-correcting feedback loop in both educational practice and research.

Conventional education is not a self-correcting practice like many other practices (Goodlad 1984). For example, if movie directors produce a movie that the audience does not want to attend, generally speaking, the movie directors have only three major choices: either to change their practice of movie-making (and convince producers to give them a second chance), find an audience who would like their movie, or leave the profession of movie-making. The movie directors would not and could not spend their time thinking about how to force or bribe the audience to stay in the cinema watching movies they do not like. The movie directors cannot do it, even if they wished to. But this is exactly what many teachers do and can afford doing. Generally speaking, the movie-making practice is self-correcting, forcing the participants either to improve or leave their practice. Meanwhile, institutionalized educational practice is not self-correcting; it forces students to adjust to and cooperate with whatever poor, insensitive, irrelevant, useless, boring, and dysfunctional teaching practice they have to experience.

Recent educational US policies such as No Child Left Behind (NCLB), launched by President George W. Bush, and Race to The Top, launched by President Barack Obama, are aimed at addressing this breakdown in the self-correcting loop through accountability policies. These accountability policies reward and punish teachers, administrators, and whole schools based on results of high stakes testing of their students. The politicians' arguments for these accountability-oriented educational policies sound very reasonable. Indeed, if teaching is a goal-directed practice aiming at promoting certain learning in a student defined in advance, why should a teacher not measure the students' performance and knowledge before and after the teacher's instruction to see the learning gains? How else can teachers know if they are successful in their teaching?

Granted, teaching itself may not be fully responsible for the student's learning which is mediated by the student's own efforts and the right conditions, both educational and non-educational (such as being healthy and not hungry) (Taubman 2009). However, arguably before and after testing the students still can be a good, although not perfect, proxy for the teacher's teaching success, assuming that the tests are good, fair, and valid. Also, not even learning or teaching in themselves are important to judge the success of

education. Rather it is a gap (or its absence) between the students' actual performance and knowledge revealed by a good test and the expectations (i.e., educational standards) set by the educational stakeholders (i.e., state government, federal government, taxpayers, employers, school administration, school boards, educational researchers, parents, teachers, and even students themselves), is it not? When challenging, but accessible, educational standards are met by all students in whatever locally defined ways, the education seems to be high quality, is it not? The set educational standards and their regular testing define the quality of education in each particular school, do they not?

I hope that I did not caricature or distort the Bush-Obama argument for standard-based education here (Matusov 2011b). And yet, something feels terribly wrong with this argument. For a starter, education is supposed to be a future-oriented practice, in which this future becomes increasingly uncertain in the modern rapidly changing society. Yet, in general, the school curricula are designed to be based on the generic features of the designers' present and past that rapidly become the past for our students. I remember, for example, when in the middle of the 1980s teaching all students the BASIC programming language was considered the absolute-must for students' "computer literacy." Now in the 2010s, it seems a laughable educational standard and it was already laughable even for the students who graduated in the late 1980s. Unpredictability of the future is a factor for education not only at a societal global level but also at a personal local level when students cannot foresee what activities they will do in their personal future including activities that these former students will invent, innovate, or redefine that did not yet exist at the time of institutionalized education. The future is unpredictable not only because it is difficult to calculate like weather but also because it is creatively made by people.

Another problem: can a standard, a preset curricular endpoint, be designed for creativity, originality, initiative, activism, thinking outside of the box, critical thinking, or diversity that by definition requires transcending and transgressing any pre-existing norms, endpoints, goals, values, and standards? Obviously not, because all these transcendent and transgressive features by their very definition cannot be rooted in the past as all standards are. Ridiculous as it may sound, the Bush-Obama argument articulates *education-for-the-known-past* (and, probably, *poorly-guessed-future* rooted in the past) and not *education-for-the-unknown-future*. I call education-for-the-known-past, focusing on reproduction of the existing society, "*Education version 1.0*" – it dominates modern educational institutions. I call education-for-the-unknown-future, focusing on creative production of the constantly renewed society, "Education version 2.0", "a dialogue between the child and his future; it is not a dialogue between the child and an adult's past" (Griffin and Cole 1984, p. 62).

By arguing for education-for-future, I do not mean designing the school curricula by professional futurists, societal palm readers (which probably still would be an improvement over the current system of the curricula design). I do not even call for teaching students "learning how to learn" – the "new" kind of curricular standards. Rather, I suggest that education should focus on students making their own future from their own present here-and-now in diverse socially valuable practices. While the future cannot be known, it is constantly and actively being made by people, and, thus, by students. Education 2.0 is about actively engaging students in making their future in their present by getting creatively out of the box of the known present and past. In other words, I want to call for *dialogic education for agency* (i.e., student's agency) (Matusov 2011a).

I argue that standards and accountability cannot make education self-correcting because they focus the educational practice on the wrong goal – i.e., education-for-the-known-past defined by standards rather than education-for-unknown-future based on transcending the past and the present (Buchanan 1979).

Contrast between Education 1.0 and 2.0 in Terms of a Framework Based on Aristotle's Philosophy

Aristotle (2000) introduced the notions of *poiesis* and *praxis* describing activities and practices that are helpful for contrasting Standard-Based Education (SBE), Education 1.0 and Dialogic Education from and for Authorial Agency (DEEFFA, see Matusov 2011a; Matusov et al. 2016b), Education 2.0 (Dunne 1993). According to Carr (2006), Aristotle defined *poiesis* as "the numerous productive activities that form the basis of economic life. Because it is a form of 'making action' whose end is known prior to the practical means taken to achieve it, *poiesis* is guided by the form of reasoning that the Greeks called *technê* [and *epistêmê* – EM] and that we would today call instrumental 'means-end' reasoning [rooted in the pre-existing necessity – EM]. *Poiesis* is thus a form of instrumental action that requires a mastery of the knowledge, methods and skills that together constitute technical expertise. [*Poiesis*] provide[s] the principles, procedures and operational methods which together constitute the most effective means for achieving some pre-determined end" (p.425–426). Basically, the conventional technological standard-based education (SBE), Education 1.0, supported by the Bush-Obama accountability policies, aiming at making the students arrive at preset curricular endpoint is *poiesis*. Instrumental learning involved in *poiesis* defines training, in contrast to education.

In contrast to *poiesis*, Aristotle defined *praxis* as an activity, in which its goal, quality, and endpoint is not preset but rather defined and unfolding in the activity itself,

> Although, for Aristotle, praxis is also a form of action directed towards the achievement of some end, it differs from *poiesis* in several crucial respects. First, the 'end' of *praxis* is not to make or produce some object or artifact, but progressively to realise the idea of the 'good' constitutive of a morally worthwhile form of human life [i.e., *sophia* – EM]. But *praxis* is not ethically neutral action by means of which the good life can be achieved. The good of *praxis* cannot be 'made': it can only be 'done'. It follows from this that praxis is a form of 'doing' action precisely because its 'end'—to promote the good life—only exists, and can only be realised, in and through *praxis* itself. *Praxis* also differs from *poiesis* in that knowledge of its end cannot be theoretically specified in advance and can only be acquired on the basis of an understanding of how, in a particular concrete situation, this knowledge is being interpreted and applied. *Praxis* is thus nothing other than a practical manifestation of how the idea of the good is being understood [i.e., *sophia* – EM], just as knowledge of the good is nothing other than an abstract way of specifying the mode of human conduct through which this idea is given practical expression. In *praxis*, acquiring knowledge of what the good is and knowing how to apply it in particular situations are thus not two separate processes but two mutually supportive constitutive elements within a single dialectical process of practical reasoning [i.e., *phronêsis* – EM] (Carr 2006, p. 426).

Praxis does not involve any preset endpoints but rather defining and investigating what the good is. It defines its own path, goal, and qualitative value as it moves ahead. A good example of *praxis* is artwork. For example, the great Russian novelist Dostoevsky did not only create literary masterpieces but also a new vision for a polyphonic novel and audience that appreciates it (Bakhtin 1999). Arguably, the DEEFFA, Education 2.0, is *praxis* because critical consideration of teachers' and students' values, desires, worldviews, and goals is also viewed in DEEFFA as the key part of education itself, defining the practice of education. Not only a pedagogical practice defines the teacher's own educational philosophy – i.e., what kind of learning and guidance is good and valuable – but it is also defines what good education is for the student. From the DEEFFA perspective, students' critical consideration of what is good for them is education. Better preparing students for their unknown future, helping with the unfolding present and understanding the hidden past are a part of education itself. Thus, the issue of defining the quality of education in the DEEFFA perspective is not the exclusive business of educational experts, business and employer community, politicians, state bureaucrats, taxpayers, teachers, and/or parents, as it is predominately now in the conventional education, but rather the primary business of the students themselves (i.e., the student's authorial agency, see Matusov et al. 2016a). Of course, the listed parties can assist this process for the student but they should not interfere in it by imposing their own educational values on the student. In the *praxis* of DEFA, critical consideration of the educational values themselves is a part of the student's curriculum (Matusov and Marjanovic-Shane 2012, 2014, 2016).

From an Education 2.0 point of view, education is primarily self-education (i.e., autodidact, see Sidorkin 2009), assisted by teachers, peers, and other means. Students author their own education. Unpacking the notion of education is not done before the practice of education but only in it, primarily by the student and secondarily by the teacher. Thus, education understood as *praxis* creates its own self-correcting feedback loop, without accountability policies, as it is often done in many others *praxis*-based practices (e.g., movie-making). When education is bad, students should have an opportunity to vote with their own feet as often happens in "free-choice learning environments" such as museums, zoos, aquariums, some afterschool programs, and innovative "free schools" (Falk and Dierking 2002; Falk et al. 2001; Greenberg 1992; Holt 1972; Matusov 2009; Neill 1960; Rietmulder 2009). Such a negotiation of the values, qualities, goals, and desires is impossible in *poiesis*-based education (SBE, Education 1.0), – i.e., when students are forced to attend their classes unilaterally defined by others and they cannot vote with their feet – the self-correcting feedback loop is broken and pedagogical violence emerges as its result (Matusov 2009; Sidorkin 2002).

In Standards Based Education, Education 1.0, both students and teachers become slaves of imposed standards, i.e., preset curricular endpoints. Instead of promoting the open-ended self-transformation and self-actualization of students and teachers, Education 1.0 forces both students and teachers to conform to (preset) educational standards. Instead of treating students and teachers as subjects of their own *praxis*-based pedagogical actions (as in Education 2.0), SBE views students and teachers as objects of *poiesis*-based pedagogical actions. Instead of focusing on processes of students' authorship, SBE focuses on outcomes of students' conformity with preexisting, decontextualized and impersonal educational standards. Of course, in any SBE (Education 1.0) educational environment, even a highly oppressive one, students

and teachers, despite being viewed as objects of pedagogical or administrative actions, remain active subjects and authors of their own actions, but their authorship often becomes distorted, subversive, resistant, unassisted, unrecognized, illegitimate, undergrounded, and non-educational (Lobok 2001, 2008; Matusov 2011a).

Researchers-Practitioners Breakdown of Institutionalized Educational Practice

Another breakdown of conventional institutionalized educational practice is a breakdown between educational research and educational practice. Cochran-Smith and Lytle (1993) described this breakdown between educational research and educational practice in the following way,

> For more than 15 years, researchers have been exploring effective teaching by correlating particular processes, or teacher behaviors, with particular products, usually defined as student achievement as measured by standardized tests (Brophy and Good 1986; Denham and Liebennan 1980; Dunkin and Biddle 1974). Underlying this research is a view of teaching as a primarily linear activity wherein teacher behaviors are considered causes and student learnings are considered effects. This approach emphasizes the actions of teachers rather than their professional judgments and attempts to capture the activity of teaching by identifying sets of discrete behaviors reproducible from one teacher and one classroom to the next. Research of this kind has been associated with the view of teacher as technician (Apple 1986), wherein the teacher's primary role is to implement the research findings of others concerning instruction, curriculum, and assessment. With this view, the primary knowledge source for the improvement of practice is research on classroom phenomena that can be observed. This research has a perspective that is "outside-in"; in other words, it has been conducted almost exclusively by University-based researchers who are outside of the day-to-day practices of schooling (Cochran-Smith and Lytle 1993, p. 6).

Cochran-Smith and Lytle diagnosed the problem of the practitioner-researcher breakdown in this hierarchical and positivistic dominant approach to educational research that unilaterally pre-defines goals, inquiries, and methods and imposes them on educational practitioners. The authors proposed an alternative approach to educational research focusing on studies of "classroom ecology" through inquiries formulated by educational practitioners using mostly qualitative and interpretative research methods. They argue that educational practitioners are often involved in research that remains private and not very systematic. In their book, Cochran-Smith and Lytle cited exciting examples of practitioner-generated research by teachers alone or in collaboration or with guidance of university academicians.

In my evaluation of Cochran-Smith and Lytle's argument, I agree with them that university-based academia often ignores practitioners' inquiries, concerns, and research (both private and published). Since the early 1990s when their book was published, in my observation, university-based academia has been democratized in terms of its research methodology – qualitative and interpretative research methods have become

more respected and widely used and taught in the educationalist academia, − and in terms of engaging in practitioner-generated inquiries. However, the opposite undercurrent of the 2000s begun with the No Child Left Behind educational policy has put stress (through grant money) back on positivistic research with control groups described by Cochran-Smith and Lytle in the quote above. In my judgment, 20 years after publishing the book, educational practitioner research remains rather marginal and exceptional by its production, but even more, by its consumption. For example, some of their paragon teachers actively engaging in teacher research moved into full time university academic research (e.g., Bob Fecho, who at that time was a high school English teacher in Philadelphia and now a Full Professor of Education at the University of Georgia). Although Cochran-Smith and Lytle's proposal for promotion of practitioner research (or "teacher research" as they called it) may be failing or be severely inhibited by a lack of financial and institutional support and the undercurrent caused by the recent accountability policies, I propose another explanation for its lack of progress. There is a notable lack of consumption of teacher research, especially by educational practitioners; teachers are not picking up the research to better understand their own or others' practice. Educational practitioners remain mostly cold both to university-generated and teacher-generated educational research.

However, I propose that Cochran-Smith and Lytle might be wrong in defining educational research primarily and exclusively as knowledge production. They suggested that good teaching must be founded on a teaching knowledge base built on both university and practitioners' research that they defined as "systematic" collection of data and "systematic", "ordered", "intentional," rather than spontaneous and opportunistic analysis (p. 24). They quoted the American Association of Colleges for Teacher Education to articulate how this educational research is supposed to be used by educational practitioners,

> [T]eaching is a profession. Knowledgeable teachers are not technicians, but professionals, worthy and able to make reflective decisions or judgments and plans based on principled knowledge that is adapted to the particulars of their teaching situations, their students, their unique experiences, and their own special insights, self knowledge, values, and commitments. They have a body of understandings, knowledge, skills, and dispositions: a set of constructs that can be invoked for the explanation of cognitive phenomena . . . Professional judgment is required. Knowledge . . . enlarges the range and quality of discretionary judgments made by professional teachers in the performance of their complex work (Reynolds and American Association of Colleges for Teacher Education 1989, p. x).

I want to raise a possibility that although researched knowledge about teaching – as objective statements, existing outside of a particular practitioner, and corresponding well to reality – at times may be useful, it does not define teaching practice. This may be the cause of educational practitioners' slight knowledge about teaching generated by academic or practitioners' educational research. Please notice a tension in Reynolds' quote above between "principled knowledge" about teaching and professional "discretionary judgments" made by teachers. Although Reynolds argues that solid principled knowledge "adapted to the particulars of their teaching situations, their students, their unique experiences, and their own special insights, self knowledge, values, and commitments" should inform teachers' judgments, the former is somewhat independent of

the latter. I wonder if educational practitioners are more interested in a personal discretionary judgment-making process in particular situations rather than in objective knowledge that may occasionally inform it. And again. Aristotle's conceptualization can help us shed light on this issue.

Aristotle's Views on Four Ways of Knowing

Aristotle defined four ways of knowing (note Aristotle also introduced a fifth way of knowing "nous," i.e., perceptual intuition, but I follow Dunne in combining it with phronêsis), see Table 1 (Aristotle 2000; Carr 2006; Dunne 1993; Wiliam 2008). The *technê* way of knowing focuses on manipulating and transforming objects (including treating people as objects) for a preset desired goal via application of a well-defined sequence of actions – i.e., techniques, methods, procedures, and strategies. *Technê* involves knowledge and mastery of a method, its appropriateness for a given goal and circumstances, and necessary resources for its realization. Techniques exist outside of goals, in which these techniques can be applied: one technique can be used for different goals and one goal may be realized through different techniques. Techniques can be assembled in new techniques like Lego blocks. Latour called them "immutable and combinable mobiles" (Latour 1987, p. 227). In a similar vein, teaching has been often conceptualized in terms of "instructional strategies" (see Glossary of Instructional Strategies on-line at http://www.beesburg.com/edtools/glossary.html).

The *epistêmê* way of knowing is characterized by studying reality, focusing on universality, necessity, systematicity, and objectivity. Although knowledge can be conditional, it should be true within these conditions regardless of time and place – this is the principle of universality. The principle of necessity is described by Wiliam (2008) in the following way: epistêmê "is concerned with things that are the way they are of necessity (otherwise they would not be eternal truths)" (p. 434), which is often mediated by rational reasoning and iron logic. Applying to educational (epistemological) research, Cochran-Smith and Lytle (1993) define systematicity of *epistêmê* as "ordered ways of gathering and recording information, documenting experiences inside and outside of classrooms, and making some kind of written record. Systematic also refers to ordered ways of recollecting, rethinking, and analyzing classroom events for which there may be only partial or unwritten records" (p. 24).

The principle of objectivity is probably the most important in defining *epistêmê*. It claims that knowing is rooted in knowledge about reality out-there that exists independently of people. It proclaims interchangeability of people with regard to knowledge. Knowledge is independent of people's desires, values, goals, biases, and personalities. Knowledge is mediated by self-contained statements about the reality of high modality (i.e., statements removed of any authorship) that fit to reality as true correspondence, established through a rational discourse and scientific method by relevant people through their agreement (Latour 1987). In the *epistêmê* regime of knowing, agreement and consensus through a rational discourse of necessity are prioritized. Consensus of relevant people is a proxy for truth. Knowledge must be correctly understood, accessed, and applied to appropriate circumstances.

Currently, there is a growing call to make pedagogy "research-based" (see a pro research-based teaching argument in Hargreaves 1996, 1997; Zemelman et al. 1998)

Table 1 Ways of knowing based on Aristotle's framework

Type of activity	Poiesis: working toward preset endpoints		Praxis: goal and value defining	
Type of discourse	Rational objective discourse about necessity, manipulation, validity, and reality		Critical axiological authorial discourse about desirability, meaning, and possibility	
Ways of knowing	Technê	Epistêmê	Phronêsis	Sophia
Definition	Skills detached from the purposes; methods, rules, algorithms, strategies, techniques of dealing with things that can be different from what they are toward a preset outcome	The universal, objective, systemic, eternal truth, detached from any human subjectivity, − the truth of the necessity	Practical, situated, participatory, addressive, perceived, embodied wisdom of local and unique possibilities – the truth of good possibilities; perceiving, understanding and meaning making of the situation	Inquiries of the ultimate, "final damned questions" (Bakhtin 1999) including existence, virtues, and goodness; examination of the world as a whole
Mediation	Recipe, rule, procedure, algorithm	Scientific text	Local authorial judgment	Philosophy
Medium	Method	Objective knowledge	Person	Philosophical discourse
Learning	Training, participatory socialization		Deep and critical understanding in a discourse	
Pedagogy	Technological Standard-Based (Education 1.0)		Dialogic Education From and For Authorial Agency (Education 2.0)	

(see a contra research-based teaching argument in Hammersley 1997; Taubman 2009). In the current educational research driven by the *epistêmê* way of knowing, rationality is often viewed as a mechanical linear cause-effect involving mono-goal defining educational success (e.g., raising achievement test scores). However, ecological rationality of circular and probabilistic causality and multiple definitions of success for diverse participants has not been entertained yet (Labaree 2010).

Bakhtin criticized the proliferation of the *epistêmê* ways of knowing and researching in social sciences and humanities in the following way:

> The exact [natural – EM] sciences constitute a monologic form of knowledge: the intellect contemplates a thing and expounds upon it. There is only one subject here—cognizing (contemplating) and speaking (expounding). In opposition to the subject there is only a voiceless thing. Any object of knowledge (including [a human being– EM]) can be perceived and cognized as a thing. But a subject as such cannot be perceived and studied as a thing, for as a subject it cannot, while remaining a subject, become voiceless, and, consequently, cognition of it can only be dialogic. … The activity of the one who acknowledges a voiceless thing and the activity of one who acknowledges another subject, that is, the dialogic activity of the acknowledger, the dialogic activity of the acknowledged subject, and the degrees of this activity. The thing and the personality (subject) as limits of cognition. Degrees of thing-ness and personality-ness. The event-potential of dialogic cognition. Meeting. [Personal, subjective, interested – EM] evaluation as a necessary aspect of dialogic cognition. The human sciences—sciences of the spirit... (Bakhtin 1986, p. 161).

In social sciences and humanities, people, who are studied, are implicitly and explicitly addressed by those who study them and this addressivity constantly transforms studied reality and its meaning. People become dependent on statements they make and the statements become dependent on the people who made them and about whom and how they are made. “A slow learner” or “a low achieving student” is not just a scientific educational diagnosis but a social label affording certain normalized relations and treatments of people and their responses. Also, “the most effective”, “best”, “research-based”, “evidence-based” objective knowledge and techniques involving dealing with other people cannot replace personal discretionary judgments, goal-defining processes, prioritization of concerns, and considering values. These processes are rooted not in the necessity of how reality really is but in (continuously transforming) imagined new possibilities, new realities that do not exist yet, axiology (i.e., setting and justifying personal values, desires, and biases) and validation of virtues (i.e., what is good and why). Arguably, all these processes, including addressivity, are at the core of good teaching.

Connection between Teaching and Aristotle’s View of the *Phronêsis* Way of Knowing

Teaching is an eventful, relational, dialogic, authorial, experiential, and value-driven process. In other words, teaching is *phronêtic*. Aristotle defined the *phronêsis* way of

knowing as practical wisdom employing solid personal judgment in a particular situation, "*Phronêsis*… characterizes a person who knows how to live well (eu zen). It is acquired and deployed not in the making of any product separate from oneself but rather in one's actions with one's fellows [and addressing others – JG]. It is personal knowledge since through the living of one's life, it characterizes and expresses the kind of person that one is" (Dunne 1993, p. 244). *Phronêsis* is "internally motivated by the desire for good" (p. 271) as it defines what this good may mean in the practice, and, thus, defines the actor's goals, values, and biases, and the actor him or herself. *Phronêsis* is inseparable from and embedded in the practice and embodied in the person/actor him/herself.

> Thus, for Aristotle, *phronêsis* is not a method of reasoning, but a moral and intellectual virtue that is inseparable from practice [and the person him or herself – EM] and constitutive of the moral consciousness of those whose actions are rooted in a disposition to do 'the right thing in the right place at the right time in the right way' (MacIntyre 1981, p. 141). As such, *phronêsis* is a mode of ethical reasoning in which the notions of deliberation, reflection and judgment play a central part. 'Deliberation' is necessary because, unlike *technê* [and *epistêmê* – EM], *phronêsis* is not a methodical form of reasoning about how to achieve some specific end, but a deliberative process in which both means and ends are open to question. Such reasoning is reflective because the means are always modified by reflecting on the end just as an understanding of the end is always modified by reflecting on the means. And *judgment* is an essential element of *phronêsis* because its outcome is a reasoned decision about what to do in a particular situation that can be defended discursively and justified as appropriate to the circumstances in which it is being applied (Carr 2006, pp. 246-247).

Phronêsis is embodied in and defines the person as the person authors him/herself in the process of *phronêsis*, while taking responsibility for it. The result of *phronêsis* is not necessarily new knowledge that can exist outside of the person and can be used by other people, but a new person who can perceive reality differently, can espouse different biases and values, and is able to make local on-flight judgments differently than before. In *phronêtic* learning, people primarily do not "take away" some new ideas and skills (although it may happen as well), but rather renew themselves. *Phronêsis* involves a transformation of the person – his or her subjectivity – but this transformation is open, unpredictable, and uncertain, not preset in advance.

The *sophia* way of knowing focuses on searching, defining, and justifying virtues – what is good and why. It involves an axiological discourse rooted in ethical, relational, and ontological considerations. In education, the *sophia* way of knowing involves debates about educational philosophies – what constitutes valuable learning and guidance and why: transmission of knowledge, instructionism, standards-based education, adult-run, child-run, individual constructivism, social constructionism, collaborative, community of learners, dialogic pedagogy, DEFFAA and so on. Currently, with few exceptions, these diverse and often antagonistic educational philosophies have been fighting for the societal monopoly organizing institutional education (both public and private) with SBE having a

firm grip on this monopoly. The dominant debate in education is how to organize education in "the best" way (Matusov and Marjanovic-Shane 2016). However, in my view, inadvertently and ironically, this heated debate for "the best" education also promotes *sophia,* in that it promotes the plurality, democratization, and diversification of education. This diversification legitimizes diverse, if not antagonistic, educational philosophies and moves education toward diverse, if not antagonistic, educational goals.

But, what might be even more important for my own particular partisan educational philosophy of DEFFAA is the acknowledgement that *sophia* is a legitimate and necessary part of education itself. From the DEFFAA point of view, a search for what is good for students, including what good education is for them, should be a part of education itself. Good education cannot be defined outside of the practice of education, and without students being actively and legitimately engaged in the process of defining good education for themselves. Not just values and goals are expected to emerge, rather than preexist (i.e., *poïesis*) in the educational practice (i.e., *praxis*), but also students legitimately defining the virtue of education, in which they choose to be involved, or can jump-start a self-correcting feedback loop in their education. In other words, for DEFFAA, education is not *poiesis* but *praxis of praxis* (Matusov and Marjanovic-Shane 2012).

Sophia and phronêsis are mutually supportive of each other. At some point practical authorial contextualized wisdom of here-and-now breaks down and has to be transformed into sophic public discourse about virtues, values, and goals. Similarly, at some point sophic discourse about values has to be tested by practice, ontological experiences, and phronêtic wisdom.

Finally, I want to make an important note here. Although I and some of my colleagues (Carr 2006; Dunne 1993; Wiliam 2008) present the two groups of these four ways of knowing as somewhat antagonistic and dichotomist (see Table 1), in our view, these four categories are abstractions that mutually constitute each other. In other words, under a deep analysis, one can reveal that *epistêmê* does not exist without *phronêsis* or *sophia* or *technê,* and this is true for all four ways of knowing. For example, *epistêmic* knowledge of 2 + 2 = 4 tacitly involves *phronêtic* judgment of when this knowledge is applicable and when it is not (e.g., adding two friends to two friends does not necessarily and always constitute four friends). Similarly, *poiesis* always involves elements of *praxis* while *praxis* always involves elements of *poiesis*. In his book, unfortunately, Dunne's analysis was not grounded in the material of education but in philosophical texts by Aristotle and other philosophers, despite his thought-provoking introduction and insightful concluding remarks on education. Dunne (1993) tried to develop these notions without extreme abstraction, unnecessary dichotomizing the picture. However, the fact that these four ways of knowing mutually constitute each other does not mean that they are equally important for a particular practice (e.g., in education). Together with Dunne, Carr, and Wiliam, I argue that the practice of education is mainly defined by *phronêsis* and *sophia* and, especially by *phronêsis*, with *epistêmê* and *technê* holding secondary roles in it. This possible dominance of one of several mutually constituted concepts for some particular practice or event can be illustrated by an example of the concepts of "day" and "night" that also mutually constitute each other. In winter, night dominates day; while in summer, day dominates night. Similarly, Dunne, Carr, Wiliam, and I argue that in pedagogy, *phronêsis* and *sophia* dominate *technê* and *epistêmê*. And *praxis* dominates *poiesis*. This is not necessarily true for some other practices (see Dunne 1993) and educational

research should recognize that. Education is mainly *praxis* rather than *poiesis*. If teaching involves mainly a *phronêtic* way of knowing, is a *phronêtic* research on teaching possible and, if so, what does it involve? My answer is yes, and I will turn now to an example of such research on teaching to unpack this dense conceptualizing.

Description of *Phronêtic* Research on Teaching: Preservice Teachers' Studies of their Own Teaching

Before I start my description of *phronêtic* research on teaching I want to make several notes preparing a reader for my particular description. It is not easy to describe *phronêtic* research in teaching because the focus is on transformation of people: their perceptions, biases, values, goals, virtues in their judgments and actions. *Phronêtic* research is not some kind of knowledge (i.e., a kind of *epistêmê*) that can be taken from this research and applied to other circumstances and by other people. Although the latter is also possible as a result of a *phronêtic* research, and maybe even unavoidable, the focus of *phronêtic* research – i.e., what makes it *phronêtic* – is not knowledge but personal transformation. Second, I use an *epistêmic* account to describe *phronêtic* research by presenting *phronêtic* design, observations on the events, and my analysis of them, which all together constitute primarily *epistêmic* knowledge. A *phronêtic* account would rather involve my provocation to transform my readers by disrupting their subjectivities. In other words, I expect my readers to read about *phronêsis* in a form of *epistêmê* knowledge, but not experience *phronêsis* themselves while reading about it (although some scholars are experimenting with the development of phronêtic accounts in educational scholarship; for example, Hammer and Zee 2006; Matusov and Brobst 2013; Orenstein 2011; Paley 1992; Prendergast et al. 2009; Richardson 2011; Sameshima 2007).

Background

For the last 20 years, I have been teaching undergraduate preservice teachers through engaging them in studies of their own practicum teaching that I have organized in urban afterschool programs. The reason I wanted their teaching practicum to be in afterschool programs and not in schools was because I wanted to create a "safe-learning environment" for my preservice teachers, so their pedagogical mistakes would not lead to some interpersonal disciplinary problems with their students; rather, I hoped that their students, participants of urban afterschool programs, could provide their feedback on my preservice teachers' insensitive pedagogical actions by freely raising their voice or just by legitimately moving away from the preservice teachers. In afterschool programs, children can freely move away from my students when their learning activities and guidance are insensitive to the children's educational and ontological needs. Thus, a safe-learning environment is created by self-correcting practices, in which participants can vote with their feet. Thus my preservice teachers could try out their pedagogical ideas in diverse curricula without being constrained by school organization or current accountability pressure (Matusov 2009, ch. 12; Matusov et al. 2005).

I have come to a conclusion that neither my students' detailed reflective field notes of their teaching nor my observations could provide "data" or "text" for their *phronêtic*

research of their teaching. The students' field notes and oral accounts of their teaching were usually based on their *phronêtic* immediate perceptions and judgments of the unfolding complex events, unavailable to me and their peers and even my students themselves afterwards. For example, preservice students may describe a child with whom they worked as "acting out" but without me and peers observing the events ourselves it was difficult to show alternative judgments of the events to the teaching author who may have overlooked relevant aspects of the events at the moment of his or her teaching (Matusov 2001). Thus, it was very difficult to provoke any disruption of these perceptions and judgments necessary for *phronêtic* research. For example, my students might perceive and judge the children, with whom they worked, as "lazy" and "rude", but it was difficult to plausibly introduce an alternative explanation of a dramatic event without both of us seeing it and referring to its specifics. My direct observations of my students' teaching gave me an outsider vista that could promote a dialogic disagreement with the students, but my students and I did not have shared "text" that we could use to test our perception and judgments with each other. Thus, we could not ground our dialogue in the shared material of the authorial teaching by my students.

I have realized that only videotaped teaching could provide such a shared "text" of teaching that could be used for testing ideas by the authors of the teaching and its observers (e.g., their peers and me – and potentially their students as well). I asked an afterschool program for permission to videotape the afterschool activities involving the preservice teachers and, after receiving permission, asked my students to videotape their teaching and show it in class.

Design

My initial design of *phronêtic* research on teaching involved asking the authors of teaching to prepare video clips of their "really good" and "problematic" teaching. However, only a very few students did what I asked (interestingly, those students who prepared the clips, did not want to be schoolteachers but rather planned to go into education-related fields. It has to be studied if it was a pattern or just a fluke). The other students explained to me that: 1) they did not want to see themselves on the video, 2) their teaching was "not good" or "terrible" so they seemed to want to keep themselves away from re-traumatizing themselves, and 3) they felt that watching themselves was a waste of time since they felt they knew what happened pretty well. So, I dropped this requirement of authors preparing videotapes of their teaching prior to the class, as a part of the practice of publicly discussing their video-texts of authorial teaching being self-correcting.

Phronêsis is a very personal way of knowing because an actor's local perceptions and judgments in the activity heavily characterize the actor him or herself, the actor's values, biases, virtues, and worldviews. Thus, *phronêsis* demands answerability and responsibility from the actors to their students, professional community, and broader public. *Phronêsis* makes an actor vulnerable to a negative judgment and labeling – possibly subjecting the author to a summative assessment, sorting the actor in a socially undesirable category with its negative consequences for the actor. This potential harm of *phronêtic* research is especially true for teachers.

To address this *phronêtic* vulnerability for my preservice teachers, I showed them my own videotaped teaching of urban children in an informal setting, with a focus on critical analysis of actual and missed teaching moments. I also encouraged my students to bring and try their planned learning activities on the class, and then we provided feedback on their strengths and formative assessment to tweak their pedagogical design. In general, I tried to develop both a challenging and supportive learning environment that provided trust, safety, critical discourse, and support for my students (despite the preexisting strong ideological disagreements among the students self-labeling themselves as "progressives" and "realists" in education).

Finally, I employed a strength model, rather than a deficit model, of analysis in reflection on my students' teaching. While watching videotaped teaching, I asked my students to focus on what good things were present in actuality or potentiality in their teaching rather than on what was missing (as a deficit model would do). The strength model, focusing on revealing and expanding an actor's strength, can promote critical discussion and evaluation of values and virtues that are often tacitly present in the author's actions and can generate new teaching values and teaching goals. It also helps an author feel inspired to experiment in the practice using new approaches, new goals, and values. In contrast, a deficit model, focusing on a gap between a preexisting norm-value and actual performance, discourages critical evaluation of values, goals, and biases and limits any experimentation within the preexisting good.

I usually started our *phronêtic* research in class by asking the authors of their teaching (sometimes students designed and performed their teaching individually, and sometimes in small groups of their choice) to describe their lesson and to report on their holistic feeling about their teaching and the justification of these feelings, focusing on what went well and what was problematic. As I said, my students usually were dissatisfied by their teaching either partially or fully. I initially drew a table on a blackboard with three rows: "Teaching strengths", "Children's learning", "Suggestions for teaching improvements" although later students added other categories such as "What was urban in the lesson?" and so on. I asked the authors to show several 10–20-min clips of the video of their choice and we discussed them in class, focusing on the inquiries presented in the table (of course, free and unstructured questions or comments were welcomed). When students provided their ideas, I made cryptic records on the blackboard. With the students' permission, I often audio recorded our *phronêtic* discussions.

Example of *Phronêtic* Research: "Meet my Chinchilla"

Three of my students, white middle-class suburban females about 20 years old, developed a science lesson to present to the afterschool children about chinchillas. The idea was that Maria (all students' names are pseudonyms here) would bring her chinchilla and tell the urban children in the afterschool program about its habitat and behavior while two of her peers, Bonnie and Bianca, would help by videotaping and googling on the Internet when children asked questions in order to model how the children could find information of interest. When asked about the lesson, all three students stated that it was a disaster from the beginning to the end. The students claimed that the wireless Internet did not work on that day (the students did not come

to the afterschool program in advance to test the Internet), the children were disrespectful and unruly, it was chaos, and not much learning was happening. They said that the lesson might have worked in a school setting where discipline is strictly enforced or with a small group of highly cooperating children. My students complained that nobody from the afterschool program staff helped them. They stated that they needed to learn more about how to impose discipline on the children. It was clear to me that their lesson did not fit their pre-existing expectations of what a good lesson involves treating education as *poiesis*. They apparently searched for appropriate *technê* to solve the perceived tension.

The two video clips showed about 15 African-American elementary-school-aged children of diverse ages and gender sitting around a big square table. Maria was standing and facing the children on one side of the table. She had just got her chinchilla out of a carton to show it to the children. Apparently attracted by the event, a mixed group of the Center staff was standing on the perimeter behind them, including the director, teenage Center youth, and some undergraduate teacher education students who also had a practicum at the Center that day (they were in and out during the activity). Bonnie was videotaping while Bianca tried to make the wireless Internet work on her laptop. Contrary to the initial report by Maria, Bonnie, and Bianca, the first clip started with the director politely calming down the children in order not to scare the animal from the noise and jumping up out of excitement. My students did not take this guidance clue for how to communicate their expectations to the children – at least not immediately.

The session was dominated by Maria firing mostly short-answer, informational quizzing questions at the children and then fishing for the correct answer or providing them to the children. For example, as she pulled the chinchilla out of the box, she asked with a smile, "Do you know what animal this is?" Some children raised their hands but other were yelling, "A rabbit!" I could also hear, "A squirrel! A rat! A big mouse!" Maria chose a boy who raised his hand to say it was a bunny. Maria replied, "It's not a bunny!" She waited until another boy said that it was a chinchilla. On other occasions during the lesson, Maria provided the correct answer without much elaboration and then asked the children about what they knew about chinchillas, but children were silent, apparently not knowing much about chinchillas.

In our class *phronêtic* discussion, we commented about how much all the children were engaged, consumed and interested by the learning activity (see Fig. 1), a definite strength of the activity design. They also praised Maria for taking a big pause after her question, letting the children think and brainstorm. The class noticed and praised Maria for calling on a boy who raised his hand, sending a message to the children that she would prefer calling on children who quietly raise their hands. Also, many students pointed out that the children made very good observations about the chinchilla's appearance, in that it resembles rabbits, mice, squirrels, and rats; later in the video, some of the children then arrived at an important conclusion that the chinchilla belongs to the rodent family of animals. That was considered by the class to be evidence of children's learning. The class made a suggestion to Maria, Bonnie and Bianca that instead of fishing for the correct answers, they could have asked children why-questions to justify why they thought it was a rabbit, or a squirrel, or a big mouse, or a rat, focusing the children's attention on the morphology and habitat of these animals belonging to the same group. Maria got very excited about this suggestion and

Fig. 1 Children attentively listen to Maria's introduction about her chinchilla

commented that now she understood better why some children suggested that the chinchilla comes from a trash can:

Maria: Chinchilla actually… an exotic animal. Can anybody guess where chinchilla comes from?

A boy (smiling): Trash can! (Children laughed)

Maria: Not a trash can!

Children kept guessing, "Jungle", "Forest", "Rainforest", while Maria was rejecting these guesses in a straightforward manner, "Not from a rainforest", until a girl guessed, "Hills".

Maria: You're very close. Not from hills but it really comes from an Andes mountain range. Does anybody know where the Andes are?

A few children: Canada.

Maria: It's not in Canada.

Maria turned to Bianca expecting her to hook her laptop to the Internet so the children could see the world map to show the Andes Mountain Range, but the wireless Internet did not work.

Maria: OK, The Andes Mountains are located in Chile and Peru.

Maria commented when viewing this episode that she should have asked the children about their joke stating that the chinchilla came from a trash can because it might reflect children's insight connecting chinchillas with other rodents and their habitats. Maria called it "my missed teaching opportunity". Another student in our

class objected that the children's joke might refer to the carton, in which Maria brought the animal. After some discussion, we all agreed that these all were plausible possibilities, but Maria's asking children to explain their joke might clarify the intended meaning or several meanings. Exploration of possible plausible meanings and imagining alternative actions are the birthmark of *phronêtic* research. This incident was similar to Hammer and Zee's (2006) discussion about science teachers *phronêtically* exploring videotaped lessons involving children's talking about science. In this research, the science teachers watching videotaped lessons also tried to interpret students' contributions and to imagine alternative actions by the teacher in the lesson.

Bonnie commented that talking about the Andes Mountain Range was probably out of the realm of the experience of these urban elementary-school-aged children, especially without the world map. However, some other students in the class disagreed, calling it "peripheral learning" and insisting that children constantly need to be exposed to something that is beyond their immediate understanding because it would click later for them and raise their interest in the unknown, which reminded me of Vygotsky's notion of "the natural plane of development" (Vygotsky 1978). As for the absence of the world map due to the Internet failure, some students and I suggested that Maria, Bonnie, and Bianca could have asked for help from the Center staff members and university students who were standing around the table – the Center had many instructional materials and they probably had a world map or even a globe.

As our *phronêtic* research discussion progressed, we noticed more and more strengths in Maria's teaching, children's learning, and good suggestions (see Fig. 2). For example, we noticed that the children started asking more and more questions in response to Maria's questions and discussion and Maria encouraged the children to ask more questions. They asked if the chinchilla can jump, what it eats, whether it can bite, where its parents were, and so on. Maria often turned their questions to their peers,

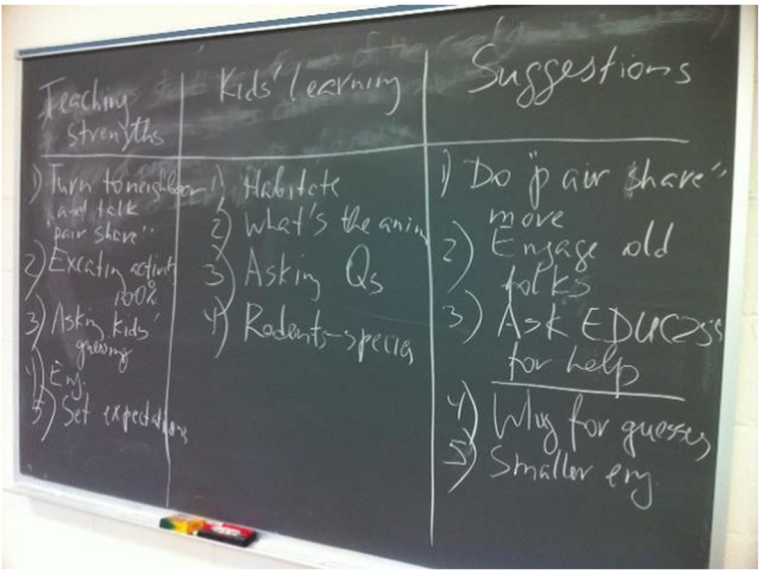

Fig. 2 *Phronêtic* research in progress: "Teaching strengths", "Kids' learning", and "Suggestions" noticed in Maria's lesson

which was also praised by us as her teaching strength. Maria, Bonnie, and Bianca were getting more and more excited about their own lesson. They also noticed many teaching strengths in their own lesson, in that they were encouraging children's learning; in turn, they made very interesting and promising suggestions on how to improve their own lesson.

The desired purpose of the lesson was also critically discussed. Maria said her initial goal for the chinchilla lesson was to convey important information about the chinchilla's habitat to the children – a teaching goal that can be defined as transmission of knowledge. However, during our class discussion, some education students saw other teaching goals in the lesson such as provoking, promoting, deepening, and supporting children's own science inquiries. The germs of such inquiries were indeed found in the lesson. There was an interesting discussion of pros and cons, desirability, feasibility, and incompatibility of these diverse teaching goals, pushing the teacher in different directions in the era of educational accountability policies such as NCLB and Race to the Top. Maria commented on these policies, "This is why I don't want to be a teacher!" I suggested to her to explore teaching in the afterschool environment that she really liked, valued, and thought to be most educational.

At some point, I asked the teaching group why they thought that the lesson was unsuccessful. Bianca replied that at times the children were disrespectful; they did not allow other children or Maria to talk. The rest of the class and I were confused because it was not our impression from the video, and we asked Bianca to show us that moment when children were disrespectful. Bianca showed us two small clips. In the first, the children spontaneously split themselves into a few fluid mini-groups, excitedly agitated and discussing the issue of whether chinchillas and other rodents would try to chew everything available to them, while Maria unsuccessfully tried to call their attention back. In the second episode, Maria and children escalated the volume of their talk, trying to yell over each other to be heard. The class immediately commented to Maria, Bianca, and Bonnie that in both cases, this was probably when children reached were the most intensely engaged with the lesson and these two "interactional disorders," as they called them, resulted from teaching successes.

I interjected and suggested that at least the first case might not be an "interactional disorder" but rather a misguided expectation on Maria, Bianca, and Bonnie's part. I focused my students' attention to the fact that during heated discussions in our class, the class sometimes spontaneously splits into small fluid groups, whose membership changes rapidly, discussing the hot issue at hand. In such cases, it was hard to hear what people said in different groups and there was no whole class attention focus. However, I said that I, as their teacher, did not see it as "a disrespectful behavior by the students" or as "an interactional disorder." On the contrary, I saw these as moments as teaching successes, and as an alternative view, a very fruitful format for interactional instruction, in which participants brainstorm hot issues. I told my students that I usually wait until the intensity of the discussion subsides and then ask each group what they discussed and what conclusion, if any, they have come to. The students remembered moments like these in our class and they agreed that it was very important learning for them, and recalled how they enjoyed arguing with their peers about hot issues (Matusov et al. 2007). As for the second case in which children and Maria's voices escalated, we discussed how a teacher can orchestrate the intensity of engaged social interaction by increasing and decreasing its intensity and creating "an ecologically comfortable

rhythm" of social interaction (Smith et al. 2009). I modeled that orchestration directly in our discussion, making it more or less intense.

Just before our class term was over Bianca commented that their lesson "was not as bad" as they thought initially. Maria exclaimed that she wanted to repeat it with the same big group, but not with chinchillas; rather she hoped to bring her rabbit to the urban community center because she wanted to try out all these exciting suggestions we all generated. She brought her black rabbit into our class during a few class meetings to practice how to reply and support children's spontaneous difficult questions (e.g., "why do rabbits poop so much?" "is it an African-American rabbit" – we generated these questions and discussed how to address them in class). In her real lesson, when she brought the black rabbit to the urban center, children did not ask these particular questions, but she successfully promoted and supported a discussion among a group of about 20 children about how to recognize what a rabbit likes versus dislikes, how to play with it without hurting it, and how to take care of it at home. Maria became more attentive to children's contributions, asking them for justifications rather than fishing for the correct answers. She tried to orchestrate the intensity of the group discussion and to her big surprise and fear the lesson was rather successful. Maria was especially pleased by kids making a parallel between the rabbit's long back legs and the back legs of kangaroos, which allow these animals to jump high.

Reflection

Phronêtic research is formative by its nature, aiming at the improvement of practice and creating a self-correcting loop – in this case, the practice of teaching. Although, as it is a by-product, it generates *epistêmê* (e.g., information-seeking open-ended questions by the teacher usually generate more discussion than quizzing closed-ended questions) and *technê* (e.g., how can a teacher orchestrate the intensity of social interaction in a group), the major outcome of *phronêtic* research is transformation of the actor him or herself. Seeing her two lessons – with a chinchilla and with a black rabbit – it is apparent that Maria differently defined her teaching goals and values and differently perceived the meaning of the emerging events. In the first lesson about a chinchilla, Maria seemed to focus on conveying important and accurate information about the animal to the children. She perceived anything that disturbed this transmission as an obstacle and tried to eliminate it through discipline and reducing the group size and its nature (i.e., selecting the most cooperative and quiet children). Her teaching group wanted me to teach them how a teacher can effectively instill discipline in children.

In the second lesson about a black rabbit, Maria apparently defined her teaching goal as generating and supporting children's inquiries about the animal and beyond. She was not fishing for the correct answer but rather was asking children to justify their guesses. At the same time, she was not afraid to volunteer information about the rabbit in a given moment. She did not try to prioritize the whole group discussion in her new lesson but allowed the children to freely split in small fluid groups and even talked with only a few children at times. However, Maria was interested in connecting subgroups together after a while. Her second lesson did not have a clear-cut end and it ran until parents came to pick up the children and the children were telling the parents what they did with and learned about the rabbit. Teaching and learning stopped being localized for

Maria. She began to treat herself as a learner as she became puzzled by why rodents like rabbits jump but chinchillas do not and why rabbits are so widespread all over the world and chinchillas are not. She changed her perspective of science from fact-based to inquiry-driven. Maria started making different judgments while designing and doing her teaching.

Despite initial reluctance, many students started liking the discussion of their videotaped lessons. As one of the students wrote in her feedback after the class was over, "Despite the fact that at first I was extremely hesitant to do the video taping of lesson activities, it is the learning experience that I will take with me for my future career. I learned so much from watching myself teach activities on video, and was able to recognize my strengths and weaknesses. … I experimented with many different types of activities and am glad that I went out of my comfort zone when videotaping these lessons." These *phronêtic* research sessions on teaching helped not only the author of the studied teaching, but the entire classroom community change their perceptions, goals, and values about teaching. Due to my miscalculation, we ran teaching sessions rather late in the semester and I proposed to my students that we cut out the third lesson, but they insisted that we needed to cut something else as they wanted to try out their new teaching ideas. In my judgment, this showed that the students appreciated the usefulness of these phronêtic research sessions.

All but one of the students initially saw their lesson as not very successful. Even more, what they initially saw as successful (e.g., students' quietness, correct answers), they later stopped valuing; while what they saw initially as problematic (e.g., chaos, noise, unpredictability), they later became appreciative of, viewing it as a sign of students' enthusiasm, unrecognized learning, inquiries, and so on. The one student who saw her lessons as successful (and I agree with her judgment) was less appreciative of the videotaped *phronêtic* research despite the fact that she also transformed her teaching as a result, but in my view, this transformation was apparently less visible to her (but not the rest of the class as the other students commented on her changes).

Phronêtic research is a necessary part of a self-correcting process. Although children at the afterschool program could vote with their feet and move freely when my students' learning activities and guidance were insensitive to their needs and interests, without a professional public reflection of their video-texts, the self-correcting process would have been incomplete. Children's negative feedback in self-correcting practice can propel novice teachers out of the teaching business, which still may be better than their socialization in how to suppress children more, however, the self-correcting process alone is not enough to provide necessary support and guidance to the novice teacher. In the free-choice learning environments of zoos, museums, democratic innovative schools and afterschools, and so on, where the self-correcting processes are at their strength, in my view, educators remain professionally unsupported and unguided. *Phronêtic* research can provide the necessary guidance and support through professional reflective discussion of video-texts of novice teachers' authorial teaching (Matusov 2011a), in classrooms and free-choice learning environments (Falk and Dierking 2002). I suggest promoting professional organizations and clubs for educators around their *phronêtic* research of their authorial teaching.

Discussion

In this paper, I have proposed that the main reason that educational practitioners do not engage in educational research, both as consumers and producers, may be rooted in the nature of mainstream educational research. Mainstream educational research is not driven by practitioners' inquires (Cochran-Smith and Lytle 1993), but, what is probably even more important, mainstream educational research is driven primarily by the *technê* and *epistêmê* ways of knowing. It views educational practice as *poiesis*, focusing on preset outcomes (e.g., preset curricular endpoints). In contrast, I suggest that educational practice is *praxis*, which generates its own goals, qualities, and values. I argue that educational practice is based on the *phronêsis* and *sophia* ways of knowing and that *phronêtic* and *sophic* research are most needed for educational practitioners. While the mainstream *epistêmê* research is focused on finding verified generalizable patterns and explaining them, *phronêtic* research should focus on revealing the participants' strengths, finding diverse meanings of the events, critical considerations of participants' values and goals, and imagining new possibilities for future practice.

Based on my hypothesis and argument, I suggest the following factors that can facilitate educational practitioners' engagement in educational research, both as consumers and producers:

1) Shift from imposed education to free-choice education for the students in order for education to become a self-correcting practice;
2) Recognition of the legitimacy and appreciation of importance of *phronêtic* and *sophic* research on teaching by teacher educators, university researchers, politicians, and practitioners (both classroom teachers and free-choice learning educators);
3) Further conceptualization of *phronêtic* and *sophic* research on teaching;
4) Active engagement in *phronêtic* and *sophic* research on teaching by teacher educators and university researchers;
5) Technical support for videotaping teaching;
6) Institutional support for videotaping teaching (i.e., easing of privacy concerns and demands for consent);
7) Promotion and support of the emergence of practitioner online and face-to-face groups discussing their videotaped teaching practices (e.g., teachers' professional clubs and cooperatives);
8) Promotion of online academic journals discussing videotaped teaching;
9) Recognition that videotaped teaching is a teaching text that can afford shared referencing;
10) Recognition of the formative, recursive, and revisioning nature of *phronêtic* research;
11) Protection of *phronêtic* research from summative assessment and accountability;
12) Work to develop among practitioners a *phronêtic* language to discuss and describe teaching events.

The success of *phronêtic* research on teaching can be defined by the practitioners' sense of urgency and its usefulness for themselves, at all levels of teaching, including *phronêtic* research on teaching in academia.

Compliance with Ethical Standards

Ethical Approval This article does not contain any studies with human participants performed by any of the authors.

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Eugene Matusov is a Professor of Education at the University of Delaware. He was born in the Soviet Union and studied developmental psychology with Soviet researchers working in the Vygotskian paradigm. He worked as a schoolteacher before immigrating to the United States. He uses sociocultural and Bakhtinian dialogic approaches to education. Address for correspondence: School of Education, University of Delaware, Newark, DE 19716, USA (ematusov@udel.edu).