The Importance of Aiming for Practical Wisdom: Why We Should Nest Epistemic Goals in Phronetic Goals for Learning

Joseph L. Polman, Robbin Riedy, and Leighanna Hinojosa
joseph.polman@colorado.edu, robbin.riedy@colorado.edu, leighanna.hinojosa@colorado.edu
University of Colorado Boulder

Abstract: Recent scholarship in learning sciences has joined wider calls in social sciences for *research* to aim toward an updated version of Aristotle's virtue of *phronesis*, often inspired by Flyvbjerg (e.g., 2001). We argue that *learning goals for participants in educational pursuits* and therefore designs for learning environments should orient toward phronesis, variously translated as "practical wisdom," "prudence," or "wise action." We provide a rationale for this proposed shift, based on education aiming toward flourishing. We argue this should not amount to ignoring the epistemic, but rather nesting epistemic in phronetic, and illustrate with examples.

Learning sciences in the age of the epistemic

The learning sciences has contributed significantly to understanding of how epistemic learning occurs, and how to design learning environments which foster epistemic learning in the context of individual disciplines. As described in prior work (Herrenkohl & Polman, 2018), the focus of learning sciences research and development on domain-specific thinking, reasoning, and practices—generally in domains aligned with traditional disciplines in formal education such as history, science, and literature—has been extremely productive for the improvement of education. Influential programs of research include Wineburg and colleagues' work on "thinking like a historian"; Linn and colleagues work on science data visualization; Tabak, Reiser, and colleagues' scaffolds specific to science disciplines; and Lee's (e.g., 2001) work on literary analysis. Goldman et al. (2016) brought together research on disciplinary expertise in history, science, and literature to create a general framework of core constructs that were then instantiated within each domain. This process highlighted high level similarities across the three disciplines but more importantly it led to defining learning goals specific to each discipline.

Given the success of the field's focus on domain specific epistemic learning, it is not surprising that the word "epistemic" has come to dominate learning sciences discourse. As shown in Figure 1, frequency of the appearance of that word has generally risen from 2008 to 2018, and it appeared at the most recent conference on average almost every other page (0.46 times per page).

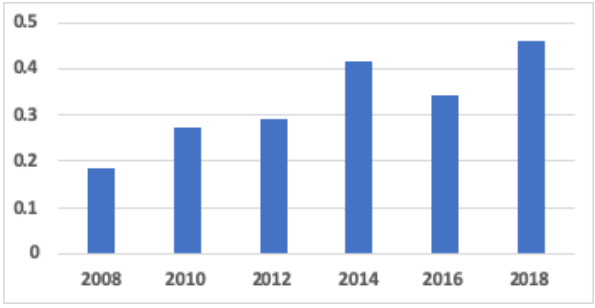

Figure 1. Uses of the word "epistemic" per page, ICLS Proceedings 2008-2018.

The word "epistemic" appeared a total of 3,354 times across those 6 volumes; the words "phronesis" and "phronetic" appeared a total of 5 times. We contend it is time for a "phronetic turn" in learning sciences.

The wisdom of Aristotle applied to social science research

In Aristotle's *Nichomachean Ethics* (350 BCE/2000), he situated the concept of *epistêmê* within a number of other constructs, which have been taken up variously in education and have informed social science research. *Sophia* (wisdom) is seen as a combination of *nous*, which is typically understood as the ability to discern reality, and *epistêmê*, which is logically built up, generalizable, and teachable—or "scientific"—knowledge. Epistêmê involves reasoning about universal, generalizable truths. *Phronesis*, on the other hand, involves not only the ability to decide how to achieve a certain end, but also the ability to reflect upon and determine good ends consistent with the aim of flourishing. Phronesis incorporates values, and concerns how individuals act based on their interpretation of contextual particulars, while taking into account relations with others.

Consistent with Aristotle's definitions, science research has traditionally been seen as aimed at developing epistemic knowledge. Until recently, social science research, including applied social sciences like the learning sciences, has also typically been seen as aiming toward the epistemic. However, in recent years, there has been a growing interest in how social science aims and methods could benefit from taking on aims grounded in phronesis. In particular, Alasdair MacIntyre (1984), called for a phronetic social science, arguing that social sciences are destined to fail as predictive sciences, because the unpredictability of human beings and human life requires a focus on practical experiences. Danish scholar Bent Flyvbjerg (e.g., 2001) carried these arguments further, suggesting that social science methods could benefit from focusing on particularized, situated phronesis rather than universalized aims at epistêmê, and that such an approach is key to *making social science matter* (as he titled his 2001 book). Importantly, Flyvbjerg recommended several updates to the original Aristotelian notion of phronesis, pointing out that considerations of power as described in the work of Foucault, Habermas (e.g., 1996), and Nietszche are essential to adequate contemporary consideration of the role of values in human life.

Rich Halverson's (2004) argument for accessing, documenting, and communicating practical wisdom of school leadership through analysis of "phronetic cases" shows how Flyvbjerg can be taken up in learning sciences:

> The aim of phronesis is not to develop rules or techniques true for all circumstances, but to adjust knowledge to the peculiarity of local circumstance … Phronesis is … embodied in character and developed through habit, it is expressed through particular actions as how individuals "size up" a situation and develop and execute an appropriate plan of action (p. 93).

We highlight two particular aspects of phronesis as Halverson took it up. First, after Gadamer (1989, p. 316), Halverson argued that "we are our phronesis in a way that we cannot separate ourselves from our knowledge" (p. 98). This aligns with contemporary arguments that we should attend to the ontological. Second, Halverson suggested that "there is a hierarchical dependence between phronesis, *episteme*, and *techne*" (Halverson, 2004, p. 100) where "the crucial thing about phronesis … is its attunement of the universal (*epistemic*) knowledge and the techniques (*techne*) to the particular occasion" (Dunne 1993, p. 368) and where "phronesis acts as an executive faculty that identifies which aspects of the environment are worthy of action, employs the appropriate means, and evaluates the results" (Halverson, 2004, p. 100).

In a recent commentary on a special issue regarding the development of science identity in *Journal of the Learning Sciences*, Heidi Carlone (2017) argued for more widespread use of phronetic methods in the learning sciences. As Carlone noted, Flyvbjerg's proposed phronetic social science:

> has a fundamentally different aim than the natural sciences—to enact a value-rationality that centers issues of power, with aims of analyzing, interpreting, and potentially transforming social activities and institutions. This kind of social science asks the following: Where are we going? Is this desirable? What should be done? Who gains and who loses? By which mechanisms of power?" (pp. 525-526).

This is in line with the learnings sciences' long-standing aim to create practical, actionable knowledge that is situation-specific, including through the signature method of the learning sciences, design-based research (e.g., Sandoval, 2014). Carlone's call is also in line with the arguments of the Politics of Learning Writing Collective (Philip, Jurow, Vossoughi, Bang, & Vazala, 2017) as well as the editors and contributors to the volume *Power and Privilege in the Learning Sciences* (Esmonde & Booker, 2016), that it is time for learning sciences to deeply consider the role of power and politics in education.

We would like to offer a full-throated endorsement of Carlone's call for making learning sciences matter more by considering the aims of the *educational practices* we are developing and researching in our own research, as well as in Halverson's earlier example. In particular, LS has focused a good deal on fostering learners' individual and communal epistemic understandings. Following the work of some other colleagues in the field, we would like to propose that we focus on eudaemonic learning and on phronesis—fostering learners' practical wisdom—while incorporating epistemic understandings in wise action.

Applying Aristotle to educational aims: Towards eudaemonia and phronesis

Chris Hoadley and Yael Kali have recently revived another Aristotelian notion, *eudaemonia*: "In the *Nichomachean Ethics*, Aristotle (350 B.C.E./2000) describes eudaemonia, variously translated as 'happiness' or 'flourishing', as a state in which individuals grow in their capacities and actions, but do so in dialogue with the society they live in" (Hoadley & Kali, 2019, p. 4). Here, the notion of flourishing is important. In contemporary terms, we might say that flourishing in the Aristotelian sense involves living in "right relation" with one another.

We propose also extending beyond the human to the relations of humans with non-humans and our planet. In order for the entire human and natural ecosystems to flourish, it is incumbent on ethical human actors to contribute to the health and sustainability of ecosystems. Aristotle's eudaemonic learning points to this, and "eudaimonia requires techne, episteme, and phronesis (skill, knowledge, and values) for true wisdom" (Hoadley, 2018).

But what does education for developing phronesis look like? In our view some learning sciences-inspired initiatives could be seen as aiming toward phronesis without having used the word (see below). Sociocultural and situative perspectives on learning have been pushing the field in this direction for some time. Scholars like Dreyfus & Dreyfus (1986), who argued that expertise is not simply rooted in cold cognition and hyper-rationality, as well as human science views within the learning sciences (e.g., Penuel & O'Connor, 2010) have moved us in this direction. In addition, indigenous scholars' views of the natural world have often been inherently relational (Bang & Marin, 2015) and phronetic, involving more holistic views of knowledge and action in learning. From such perspectives, understanding human thinking and acting requires a commitment to going beyond decontextualized knowledge and skills (Herrenkohl & Mertl, 2010). Practical wisdom transforms a decontextualized view of knowledge and skills by focusing on human actors using these tools to take action and solve problems they confront in their everyday lives. Actors are situated in particular social and cultural contexts which activate sets of values and beliefs. They bring personal motives, agendas, and specialized ways of knowing, doing, and being in relation to others and the natural world, to solve their problems and accomplish their goals. A phronetic turn emphasizes people who use knowledge and skills in relational action rather than on the structure and process of knowledge making and skill development. This is not to say that processes of epistemic knowledge creation are unimportant. Instead, they become critical background, nested within the actors' toolkits, as focus shifts to *people* who *employ* knowledge and other tools *in hybrid settings* to solve complex problems that involve purposeful collaboration and managing competing values and goals (Herrenkohl & Polman, 2018).

Examples of phronesis in action

We unpack a few short examples from our own and others' work, in order to illustrate the points made above. Several involve environmental education, and all involve "socioscientific issues" and considerations for action.

Oliver & Dennison (2013) explicitly called for environmental education incorporating wise action: "It is simply not enough to know what should be done ... Action is also required and this 'doing' in terms of environmental science can take the form of protection or restoration activities." Similarly, Lee (2015) argued that learning *activism* in socioscientific education efforts involves learning to act with phronesis. An example of an environmental education initiative that operated in this territory is the Chicago River Project described by Bouillon & Gomez (2001). In examining pollution along and in the Chicago River, students and teachers drew on epistemic knowledge and praxis from science, language arts, social studies, and mathematics. In considering what actions could and should be done, students and teachers necessarily confronted questions of competing social and ecological values which have no "right answer" but are deeply affected by contextual particulars. Walsh and Tsurusaki (2018) showed how high school students in a climate change unit engaged in not only epistemic learning, but also negotiated dissonant identities, such as being Republican or Democrat, with associated and competing values and beliefs. These and many other recent works examining relations between learning and becoming are challenging learners to develop phronesis. In addition, recent work in epistemic education aimed at promoting learners' "apt epistemic performance," (e.g., Barzilai & Chinn, 2018) despite the nominal and laudable focus on the epistemic, inevitably move into the realm of phronesis when they challenge teachers and learners to work in "epistemically unfriendly environments" (Barzilai & Chinn, 2018; Duncan, Chinn & Barzilai, 2018) involving contemporary debates.

In our own work, we saw situations where members of the public volunteering in a museum-based genetics lab made use of their knowledge of scientific content and practices and navigated tensions around "wise action" in interactions with museum guests. This tension was manifest when volunteers wanted to discuss nutritional information with museum guests that could contribute to their health; however, it was also imperative to avoid the body-shaming and embarrassment that had inadvertently taken place during previous studies. In addition, it was important to ensure that guests had a positive science experience that fostered repeat engagement with science and the museum. As a consequence, leadership consistently advocated avoiding personal nutrition discussions, but some volunteers lamented the lost opportunity for contributing to greater personal and community health. Some volunteers responded by drawing upon personal experience or outside research, others avoided giving nutritional advice altogether, and others focused strictly on the epistemic aspects of the genetics study at hand, with an eye towards improving nutrition through the creation of new knowledge. Thus, the organizers and volunteers at the museum were navigating complex waters related to competing values.

Conclusion

As noted in the conference theme ("The Interdisciplinarity of the Learning Sciences") and elsewhere (e.g., Herrenkohl & Polman, 2018), the learning sciences has long embraced multiple disciplinary perspectives and methods. We have argued that the learning sciences would do well to explicitly consider how to contribute to the development of learners' capabilities to act with phronesis in the complex, multi- and interdisciplinary, value-laden world. To be relevant in our contemporary contexts of so-called "post-truthism" and "fake news" (Polman, Duncan, McGrew, Rubin, & Vatrapu, 2019), we should concern ourselves with how education can promote phronesis. It is surely a hard problem, but the stakes are high and the benefits substantial. Our futures and our planet literally hang in the balance, as practical wisdom is required for us to address the climate crisis.

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