

Pedagogical Change and Mourning in Elementary Teacher Education

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RESISTANCE IN CURRICULUM AND PEDAGOGY IS PARADOXICAL. What critical curriculum worker isn't fond of "the multiple counter-discourses that arise to challenge the one or more dominant discourses in any educational setting" (Moss & Osborn, 2010, p. 2)? Still, when we mindfully engage resistance in our theorizing and teaching, we feel the sharp edges of complexity and contradiction. What seems a burdensome imposition to some may to others be the vulnerable, incipient gathering of enlightened reform (Lather, 1991). As we attempt to negotiate our ambiguous inner and outer relations as theorists and practitioners, the pedagogical conditions we seek to cultivate can feel simultaneously liberating and oppressive. How might we navigate these contingent and unreliable relations in ways that support greater happiness, insight, and justice? It's tempting to take the shortest path out of paradox. We've done it many times, but often with the sense that paradox has not been resolved so much as obscured by expedient rationalisms that allow students and ourselves to get on with familiar tasks by turning away from opportunities to cultivate deeper, transformative, and difficult insights. And so here we make an effort to go with paradox by tracing pedagogical conflicts into spacious contradictions that are full of possibilities precisely because they are robustly ambiguous.

We take this approach to explore alternative perspectives on the widely reported resistance of prospective elementary teachers to science inquiry pedagogies. We have encountered resistance firsthand in the troubled reactions of some elementary teacher education students to the "Science Semester", an inquiry-based science course in which two of the authors of this article worked with several colleagues over the last ten years (Ford, Fifield, Madsen, & Qian, 2013). Our group has responded in several, sometimes disparate, ways to students' resistance. Some of our responses have been, by necessity, immediate and pragmatic, others slow

and contemplative. One of our slowly percolating responses has been to improvise around theories of bereavement and grieving in order to think about our students' difficult reactions to science inquiry pedagogies as mourning in response to the disruption of social ties and meanings through which prospective elementary teachers make sense of their past, present, and future selves.

Mourning a loss can be thought of as renegotiating the relational terms of the disrupted sense of self (Neimeyer, Prigerson, & Davies, 2002), with no return possible to meanings and relationships that shaped self-understandings before the loss, but offering conditions for renewal through grieving lost selves, others, and pedagogies. We have wondered if, by theorizing about pedagogical change through models of loss and grieving, important aspects of what science teacher educators desire, and many students resist, in inquiry pedagogies might be renegotiated as we together experience learning in mourning, and mourning in learning. In this spirit we look for the creative potential of uncertainty, interference, and risk in teaching, learning, and learning to teach (Britzman, 1998, 2003). From this orientation we acknowledge the desire to avoid discomfort that animates teacher educators' (including our own) anxious responses to prospective teachers' resistance to inquiry pedagogies. By relaxing into the discomfort, rather than habitually turning away to grasp for pedagogical pleasures, we consider how students and teachers might live and learn more fully through loss and mourning.

Looking into students' troubled reactions to inquiry pedagogies we come upon the fraught relations of caring that manifest in contested desires, ideals, intentions, points of view, actions, and insights into self and other. Noddings (2005) suggests that caring—as a social relation, not a personal virtue—exists when the expressions of those offering care arise out of “engrossment and motivational displacement” toward the cared-for (p. 15). The cycle of caring is completed when the cared-for recognize and receive the expressions of those who care as lived experiences of being cared for, which, in turn, “the carer receives in his or her engrossment” with the cared-for (p. 16). Noddings' elegant framing of caring as a phenomenological whole necessarily conjures endless possibilities for incomplete, fractured, disordered, and incipient caring and non-caring in and around messy pedagogical relations. She writes that “something is very wrong” (2005, p. 15) when teachers believe they are caring, but students fail to experience being cared for. But we are more inclined to view tensions and disconnections in caring as inevitable and potentially fruitful currents in ceaselessly changing pedagogical relationships. If learning is (or ought to be) a risky business (Britzman, 1998, 2003; Luhmann, 1998), we are interested in how to express our care for students when the alternative pedagogies to which we are committed, for the sake of our students and their future students, disrupt the comfortable conditions in which students understand themselves to be the recipients of our care. We contemplate ways to work productively with this paradox by treating disruptions of the self and its caring relations as unpleasant fractures that open spaces for alternatives to the self's constricting and habitual stories about itself and others.

Science Inquiry Pedagogies and Student Resistance

A persistent but frustrated desire in US science education is to model teaching and learning on practices that reflect those scientists use to create scientific knowledge (DeBoer, 1991; Montgomery, 1994; Rudolph, 2002). Reports by prominent scientific organizations set the tone for interest in inquiry pedagogies in the US (AAAS, 1989; NRC, 1996, 2000, 2012, 2013).

The most recent and influential of these statements, *A Framework for K-12 Science Education* (NRC, 2012), argues for scientific inquiry as a set of integrated practices “used to establish, extend, and refine [scientific] knowledge” (p. 27), and that “engaging in the practices of science helps students understand how scientific knowledge develops; such direct involvement gives them an appreciation of the wide range of approaches that are used to investigate, model, and explain the world” (p. 42).

The move to inquiry pedagogies is motivated by concerns that K-16 science education presents science in a cleaned-up, final form (Duschl, 1990) that is stripped of the many contexts and complications of its production that, if acknowledged and investigated, would inform more critical understandings of and engagements with the sciences. By constructing rich learning experiences in which students and teachers together explore phenomena, ask questions, collect data, critique evidence, and construct and weigh the quality of interpretations, inquiry as imagined in *A Framework for K-12 Science Education* and the *Next Generation Science Standards* (NRC, 2013) is intended to support personally meaningful scientific understandings, and critical understandings of the sciences as knowledge practices.

This vision of inquiry pedagogy continues to influence US science education reform, reflected in national and state curriculum standards, science education methods courses, teacher education accreditation standards, conference sessions, and the research literature. But any thoughtful effort to shape science education around scientific practices has to contend with contested claims about which (and whose) practices count as scientific; how scientific knowledge and practices are or could be relevant to citizen’s everyday lives; and how science education ought to shape the relations of individuals, society, and the sciences (Rudolph, 2005; Weaver, Morris, & Appelbaum, 2001). Progressive critics are right to question and offer alternatives to the epistemic, cultural, and political worldviews that mainstream reforms would install as *science for all* (e.g., Roth & Barton, 2004; Weinstein, 2009). Nevertheless, mainstream reforms open space for student-centered pedagogies that revivify the sciences as sociocultural, historical, and personal institutions and practices. This is a vast improvement over transmitting the myths of final form science and calling that science education—at least, that’s what most science teacher educators think. Many elementary teacher education majors, on the other hand, find inquiry pedagogies inscrutable and annoying.

Science teacher educators use terms like resistance, tensions, challenges, dissonance, and difficulties to describe their elementary education students’ reactions to science inquiry pedagogies (Lee & Krapfl, 2002; Schwarz, Meyer, & Sharma, 2007; Smith, 2000; Smith & Anderson, 1999; Spector, Burkett, & Leard, 2007; Spector & Strong, 2001; Volkman, Abell, & Zgagacz, 2005; Weld & Funk, 2005). Many teacher educators believe that prospective elementary teachers come to undergraduate courses with inadequate views of how scientific understandings are constructed and disabling doubts about their abilities as science learners. Treating both students and their own attempts to implement inquiry instruction as in deficit, many teacher educators (including us) have searched for ways to ease students’ discomfort with inquiry learning. But students’ resistance is often robust. This further heightens teacher educators’ anxieties, which are fueled by the “unspoken assumption...that the ‘better’ the course, the smoother and less problematic the students’ learning is likely to be” (Brown 2006, p. 687).

Under the influence of deficit thinking, the potentially generative gaps between what teacher educators desire from students and how students respond are seen as barriers to standardized competencies prospective teachers are supposed to attain (Brown 2006; Kumashiro, 2002). If instead we acknowledge that teaching and learning are troubling and full of wonder

(Britzman, 1998), and that students bring strengths to learning that go unacknowledged when deficit thinking drives the curriculum (Howes, 2002), we might with more patience examine the deeper dynamics of and possibilities for students' difficult reactions to inquiry pedagogies. This invites alternative perspectives on pedagogical change, the robustness of students' resistance to inquiry, and the possibilities for renewal through loss and mourning.

Disrupted Identities, Learning, and Pedagogical Change

Learning and mourning both entail the hard work of renegotiating disrupted self-understandings. Selves exist as meaningful entities within cultural beliefs and practices that are picked up and cultivated by groups and individuals (Levinson & Holland, 1996). We view identity as an analytical stance from which to understand the relationships of knowing, doing, and becoming in institutions and culture (Lemke, 2001). Identities manifest in cultural networks (Fuchs, 2001) through which groups and individuals imagine, desire, try on, impose, refashion, and resist being certain kinds of people. Our self-understandings ebb and flow in this cultural identity work, as we variously take up, attach to, reproduce, transform, refuse—and live in ignorance of—the many identities imposed on us. Selves exist interdependently in multitudes, known and unknown; a self always exceeds notions of itself as an independent, enduring, and autonomous individual (Pinar, 1998).

We follow Britzman (2003) in believing that “learning to teach—like teaching itself—is always the process of becoming: a time of formation and transformation, of scrutiny into what one is doing, and who one can become” (p. 31). We have come to see prospective teachers' reactions to inquiry teaching and learning in new ways by attending to “the processes of how we make ourselves through and against others” (Luhmann, 1998, pp. 153-154). If learning remodels identities (Lave and Wenger, 1991), then existing conceptions of the self are at risk in meaningful curricula (Luhmann, 1998) and in pedagogical reforms that change familiar and comforting relations. The strange classroom practices of inquiry unsettle the relations of teachers, students, and knowledge, putting at risk students' perceptions of who they are and who they are becoming. As an unsettling pedagogy, inquiry engenders resistance to knowing, an ignorance that is not so much a lack of knowing as an active refusal to become implicated in risks to the self as it knows itself (Britzman, 1998; Luhmann, 1998).

Reactions to Inquiry in the Science Semester

In the late 1990s, a group of faculty members in the sciences and teacher education at the University of Delaware, including two authors of this paper (Fifield and Ford), responded to mainstream science education reforms through a coordinated effort to teach future teachers using inquiry approaches they might one day use with their students. We developed and team-taught the “Science Semester”, an interdisciplinary science and science education methods course block for sophomore elementary teacher education majors (Ford et al., 2013). The “Science Semester” was a one-semester, 15-credit block that integrated four previously freestanding, reform-based courses in elementary science curriculum methods, biology, earth science, and physical science. We used problem-based learning (PBL) as our primary model of inquiry pedagogy. In PBL,

instructors guide students in collaborative groups as they develop and investigate questions that emerge from messy, real-world problem scenarios (Duch, Groh, & Allen, 2001).

The “Science Semester” included four multi-week PBL investigations of science and science education that served as instructional and conceptual hubs to integrate and contrast disciplinary content and perspectives from the previously freestanding courses. We developed original investigations designed to situate learning about science and science education methods in rich and meaningful social contexts. For example, in “Kids, Chemicals and Cancer,” (Allen, Donham, & Fifield, 2007) students examined an alleged childhood cancer cluster near contaminated industrial sites in Toms River, New Jersey, a community familiar to some of our students. In the course of the investigation, students studied cancer biology and epidemiology, the chemistry of environmental toxins, how pollutants move through soils and groundwater, and how to approach sensitive personal and social issues in elementary science education. The investigations proceeded through cycles of small group and individual work, taking stock and reporting out, and whole class discussions and mini-lectures by instructors, all building toward individual examinations and the presentation of group projects.

During the first two offerings of the “Science Semester” (2003 and 2004), thirty-five student volunteers participated in interviews with faculty members and a graduate student who were not teaching the course those semesters. Students talked about why they wanted to be teachers, their prior science learning experiences, and expectations for and reactions to the “Science Semester.” Students’ reactions to the “Science Semester” were complex and evolving, fascinating and aggravating. We think of their reactions as intermingling streams of easy adaptation, staunch opposition, and, in the broadest stream, a determination to do as well as possible under unfamiliar conditions. Our interest in mourning and learning emerged from contemplating the committed struggles of students who were troubled by inquiry learning, but determined to carry on along unclear paths. We focus here on the reactions of those students.

Drawing on Britzman (1998) and other psychoanalytic theorists, Kumashiro (2002) invites us to see students’ troubled reactions to pedagogical change as resistance to “interrupting comforting forms of repetition” (p. 83). Fragile selves are maintained through the repetition of pedagogical forms, and selves are put at risk when repetition is interrupted. One “Science Semester” student expressed a common frustration, more colorfully than most, telling us, “you can’t teach an old dog new tricks” (Fifield & Juck, 2006). This old dog was a college sophomore who forthrightly explained that she had spent her whole life perfecting memorization in classrooms where teachers told students what they needed to know and students gave it back to teachers. “I am just not curious like a child,” she said, “exploration does nothing for me.” She ruefully acknowledged that the teaching she was used to was “just not how [science is] taught anymore.” She was coming to understand that she had to deal with other ways of teaching and learning, whether she liked it or not.

Science Semester students described anxieties over what to know, how to come to know, and how to know when they got things right. Students and instructors alike stumbled over previously commonsense assumptions about coming to know, leading another student to complain about the professors, “I’m teaching myself more than they’re teaching me.” Some of us may see hope in this reluctant embrace of epistemic agency, but to many students it was a clear sign that something was very wrong. The loss of students’ familiar relationships with teachers, and through them, with subject matter, put at risk their understandings of themselves as good, or good enough, students. With visions of “the teacher as knowledge-bearer” (Britzman 2003, p. 121) in mind, our students wanted to learn enough science to answer questions they imagined

children would one day expect them to answer. Some of them wondered when the professors would finally get around to lecturing, “I guess being in college, I’m used to a lot of note taking, and people standing [at] overheads with outlines...[that] actually have content...” As the semester passed, many students who were initially resistant became more skilled at and receptive to collaboratively creating understandings through inquiry. Others remained puzzled about how to relate to instructors who seemed unwilling to tell students what they needed to know and do.

We suggest that students’ struggles took on heightened significance because their future teacher selves were at stake. Many “Science Semester” students said they wanted to be teachers because they loved children. Their imagined future selves, and the students they would one day teach, were caught up in the day-to-day challenges of dealing with new ways of learning about science and how to teach it. One student described the time in high school she had spent helping in a kindergarten classroom. “I feel like I would have been a better teacher right out of that experience compared to all of the negative connotations I have with teaching now,” she said, voicing what Britzman (2003) calls the cultural myth that classroom “experience makes the teacher” (p. 30). Many prospective elementary teachers enlist the imagined children they will one day teach into their identities as objects of the love that good teachers express for their students (Goldstein & Lake, 2000). Love passes through children and circles back to the self as future teachers imagine the pleasures of helping children learn (Fifield & Juck, 2006). As Noddings’ (1984/2003) describes it, caring that begins in oneself as “a move away from the self” (p. 16) toward the other is received and reflected back in lived experiences of being cared for, which “reconnects me [the caring-one] through the other to myself” (p. 49). But when the cared-for and their responses to care live only in imagined future relationships, the outbound impulse to care can collapse inward to deeper engrossment in the self. In this way prospective teachers enlist imagined children as necessary recipients of their love and care, weaving those imagined children into their current selves, and so into their relations with and expectations for their professors.

Loss, Mourning, and Meaning

Prospective elementary teachers have a lot to lose when teacher educators take up new pedagogies. This led us to wonder how we might improvise on models of grieving the loss of loved ones to understand prospective teachers’ reactions to inquiry. Spector et al. (2007) creatively adapted Kubler-Ross’ (1969) classic work on grief to examine students’ reactions to inquiry reforms in elementary science teacher education. And Nias (1993) used life history narratives in her exploration of how primary teachers in Britain grieved economic, political, and curricular upheavals in the 1970-80s. Reflecting on these studies, we wanted to avoid prescriptively linear models of grieving to allow space for the sense and nonsense that students and teachers make of pedagogical loss to be disordered and conflicted. We also wanted to consider how those in grief might engage unexpected possibilities to “extend the range of choice of action” in their lives (Brown 2006, p. 676). Although generative outcomes from loss are not assured, people are nevertheless active, meaning-making participants in loss. How might we imagine the emergence of new ways of being within the difficult fractures opened by loss in pedagogical change?

We found useful perspectives in theories of how loss disrupts assumptive worlds—“the fundamental beliefs one holds about oneself, the world, and the relation between self and

world”— and how mourning entails “reorganizing one’s working models of self and the world after the disorganization brought on by loss” (Davis, 2008, p. 309). In grief people encounter disruptions in the “rhythms of life” and relational ties that once supported ordinary activities and meaning-making (Weiss, 2008, p. 39). From these perspectives loss entails the “disruption of personal assumptions and relationships that sustain a sense of self” (Neimeyer et al., 2002, p. 235), and the reconstruction of personal meaning is the “central process in grieving” (Neimeyer, 2001, p. 4). These meaning-centered perspectives on mourning focus on the stories that create and sustain selves (Loy, 2010; McAdams, 1993), with people “organiz[ing] experience in narrative form, to construct accounts that make sense of the troubling transitions in our lives by fitting them into a meaningful plot structure” (Neimeyer et al., 2002, p. 239). Not to be understood as strictly conscious or rational, this “relearning the world of our experience” (Attig, 2001, p. 33) includes coming upon meanings when we “return to or encounter something already established, and often not of our own doing, as we mourn” (p. 34). Meaning-centered models of mourning sometimes evince a biomedical hyper-rationalism, so we feel free to open the epistemology of grieving to the “contradictory, partial, and irreducible” (Ellsworth, 1989, p. 321). Making sense of loss is not about making everything clear, any more than are teaching and learning (Aoki, 2000).

Learners’ struggles with loss in pedagogical change invite us to imagine teacher education as a spacious container for “the emergence of an ambiguous, complex, irreducible and potentially problematic teacher self” (Brown, 2006, p. 677). The identity work we have in mind is not quite reflective practice, which is too often used for “propping up the practitioners’ control and mastery” and “valorizing the quest for a rationality that can settle the trouble that inaugurates thought” (Britzman, 1998, p. 32). Critically tidying-up the self may be worthwhile if approached with humility. But webs of relations that refuse to hold still repeatedly demonstrate how an autonomous and enduring self is an illusion that frequently does not serve us or others well. Holding tightly to a particular configuration of self amplifies the drama and trauma of living with the contingency and unreliability of what we believe we know about ourselves, others, and the world (Batchelor, 2005). We might instead engage learning (and learning to teach) as intellectual and contemplative inquiries into the conditions for curious, playful, and compassionate habits of working with our selves and others to critically reconsider the foundations and consequences of commonsense notions like a “strong teacher identity” (Eick, 2009, p. 138) that derive from the “doctrine of self-esteem” (Aoki, 2010, p. 101).

Addressing resistance to inquiry pedagogies through models of loss and grieving “confront[s] a key paradox in learning to teach: there can be no learning without conflict, but the conflict that animates learning threatens to derail the precarious efforts of trying to learn” (Britzman, 2003, p. 3). Teacher educators often assume that students’ misunderstandings and negative attitudes about science are the roots of their resistance to inquiry pedagogies (Spector & Strong, 2001; Weld & Funk, 2005). We believe students’ reactions to science inquiry reflect more sweeping conflicts. Inquiry challenges commonsense epistemologies in which knowing comes from the transmission of information from teachers to students. Students with self-understandings rooted in traditional classroom roles can feel at risk and unsure of how to get what they need when instructors are de-centered and become one of many actors in the social construction of knowledge. Professors are objects of attachment for students whose understandings of themselves as students, and dreams of becoming caring teachers, enroll instructors as necessary partners in students’ identity work (Fifield & Juck, 2006). In constructing their self-understandings, students impose identities and moral obligations on

instructors to play the roles that in the students' narratives will help them become good and caring teachers. When instructors change the conditions of teaching and learning by adopting inquiry pedagogies, they disrupt webs of identity and meaning in ways that seem to many students to undermine their learning and put at risk their loving relationships (Goldstein & Lake, 2000) with the children they will one day teach.

The desire to care and be cared for can bring instructors and students into “conflict over what the cared-for wants and what we [instructors] think would be best for him” (Noddings 1984/2003, p. 24). “Science Semester” instructors took up inquiry pedagogies as an expression of their concern for students, and for the students they would one day teach. But through these pedagogies some “Science Semester” students felt they had lost the caring teachers they needed to become caring teachers for their future students. The instructors then found themselves at risk of losing “the active response of the cared-for” (Noddings 1984/2003, p. 41) that was needed to sustain the cycle of caring. “Caring is, by its nature, filled out in the other” (Noddings 1984/2003, p. 39), and so in failing to receive a positive response from some number of the cared-for—who paradoxically felt not cared-for, but at risk—the caring-ones found their good-professor identities at risk.

One response to this crisis of caring is, as we have noted, for instructors to somehow smooth the path of learning. Surely this can be done with pedagogical integrity, but in practice in science education it often amounts to taking the inquiry out of inquiry, returning teaching and learning to more familiar and comfortable terms. Another response is for instructors to forge ahead, comforted by faith in asynchronous caring—that some day their students will come to appreciate what they currently resist (Noddings 1984/2003). In the heat of the pedagogical moment, “Science Semester” instructors at one time or another relied on each of these responses. By contemplating the conditions of students' resistance to inquiry, we have come to see that losses are entailed in pedagogical change, and that mourning those losses involves relearning the self in a new pedagogical world. This suggests that a third way for students and teachers to engage the conflicts that animate inquiry learning is to approach feelings of loss in inquiry pedagogies as objects for pedagogical inquiries into the complicit relations of selves (Davis & Sumara, 2000), acknowledging and mourning losses together, and renegotiating what it means to be caring partners in teaching and learning.

Conclusion: Mourning with Our Students

Mourning as learning implicates students and teachers in one another's narrative reconstructions of themselves in a “realm where meanings and subjectivities are no longer private and isolated but social and intersubjectively based” (Hagman, 2001, p. 28). Educators are not psychoanalysts, yet meaningful teaching necessarily provokes crises in students' sense of self (Britzman, 1998, 2003; Kumashiro, 2002). Instructors can pursue caring relationships by joining students in mourning lost fantasies of “smooth untroubled learning” by inquiring into the “awkwardness of learning” (Brown, 2006, p. 687) with all its risks and possibilities.

Meaning-centered models of loss suggest that mourning is most likely to move toward renewal, however slowly and painfully, when individuals maintain “a sense of continuity with who they have been while also integrating the reality of a changed world into their conception of who they must now be” (Neimeyer et al., 2002, p. 235-6). Denying the loss of a loved one is a futile attempt to cling to continuity, to hold to a story of an enduring self, despite the reality of

contingency and impermanence. Of course, for some prospective teachers, resisting and denying change may in some sense work. There is a good chance that if they wait out the peculiarities of inquiry pedagogies, they will move on to other courses, and then to elementary schools, that embrace conventional pedagogies. But most mourners, including prospective elementary teachers in inquiry science courses, are not in denial. They struggle to make meaning, creating lived experiences from events that are full of possibilities precisely because they are troubling.

In Freudian models the bereaved must detach from the lost object to return to a normal state in which new attachments can be made (Hagman, 2001). From this perspective, prospective teachers would need to replace conventional pedagogies, and the self-understandings that go with them, with new relationships and identities in inquiry pedagogies. We are more curious about the possibilities for refashioning relationships with lost pedagogical objects to achieve continuity with the past in a changed and always changing world (Britzman, 1998; Hagman, 2001). Appealing to the theory and evidence behind inquiry pedagogies may be enough to convince some prospective teachers to embrace inquiry in their own learning and their future teaching. But this approach seems unlikely to help students create meaningful continuity with who they were and what they valued in their attachments to conventional pedagogies. Meaning-centered models of mourning challenge educators to consider what such meaningful continuity with conventional pedagogies would look like, and poses for researchers the task of exploring the ghostly traces of former pedagogies and selves in elementary science teachers and science teacher educators.

Meaning-centered models of mourning have the decidedly hopeful orientation that “even in the most painful losses, many survivors experience enhancement of personal meaning rather than its decimation” (Neimeyer et al. 2002, p. 246). Renewal seems to happen not by attempting to minimize the significance of loss, but by accepting and working with the conundrum of loss and renewal. Loss is too messy and arbitrary to leave us with no options; it reminds us that the capacity for becoming always exceeds our stories of self and invites us to pay closer attention to the paradoxical im/possibilities of impermanence. As Britzman (1998) writes, “Conflict between the new and the old is what allows the self its movement and, of course, its interminable suffering” (p. 128). The losses experienced by students and teachers in inquiry pedagogies are difficult and potentially generative. Meaning-centered models of mourning suggest that science teacher educators and prospective teachers might care for one another and renew themselves in inquiry pedagogies that elicit deeper inquiries into loss and mourning as conditions for learning.

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