

Knowing in the Doing: Observing Literacy Learning in Play

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In the post office center, three-year-old Colleen informs Lisa, "To mail it, you got to deliver. 99 sTrEET [she writes]. Here, Lisa, write [she shows her]. Write it like this. I'll help. I'll teach you."

Images of young children busily writing and reading come rather easily to early childhood educators these days. We're not too surprised when we see a pair of preschoolers huddled over paper, with pencils in hand, signing their names, or when we observe a group of three- and four-year-olds writing pretend shopping lists, reading environmental print, or sharing books with one another and their dolls. Nor are we overly awed with bits of conversation, like three-year-old Gwen telling Claire as she points to a book cover, "I readed this one. It's about Santa Claus," or Vinnie coaching four-year-old Redema, as she writes, PLEZDUNTMV (Please don't move). Observing young children's literacy activity in play over the past decade or so, we clearly see and hear them doing many things with reading and writing that we hadn't thought possible (Roskos & Christie 2000).

But what do these incidents tell us about what children know as emerging writers and readers? For example, what does Chris, who just turned five, understand when he says to Rachel, "These are real hard words to read – *real* hard"? What literacy strategies does four-year-old Brian know as he corrects his friend Sebastian, "No, it says Closed. We're clo-o-o-o-sed"? What literacy skills do toddlers Kara and Lisa use as they share a storybook, turning pages and squealing with delight at the illustrations? What's implicit in these playful actions in an intellectual sense? What are children showing us they understand and know about print? And what does this knowledge hold for learning literacy in the future instructional contexts of kindergarten and first grade?

These are thought-provoking questions. They push us to look beyond the *doing* in play for evidence of children's *knowing* – for the "knowing in the doing." What we find not only helps us enlarge our understanding of children's capabilities as writers and readers but also informs our own teaching practices, particularly in establishing favorable play environments for literacy development.

In this article, we take up these questions with a twofold intent: to reveal children's *knowing in doing* during literacy-related play and to affirm the significance of play as a literacy opportunity for young children. After describing the kinds of literacy knowledge children might express, we offer some evidence of literacy understandings, strategies, and skills as children negotiate routines, roles, and rules in their play. We conclude with some brief remarks about children's literacy in play and how it differs from the literacy learning later demanded in school.

Knowing in doing

We use the term *knowing in doing* to refer to the knowledge children spontaneously use in their play activity. In the richly detailed context of play, children do not think, then act, as if planning their play some sequential, deliberate way. Rather, their play activity stems from the creative synergy of the moment. It is shaped by the here and now, the just-previous activity, and all sorts of ideas and notions accrued from past experience.

In the press of absorbing play activity, all these forces tug and pull at children to yield what they know, understand, and prefer. The knowledge they make use of, in Polanyi's (1967) terms, is *tacit* – that is, children know more than they can say about what they are doing. Moreover, what they know is always on the move, because it is open to new features and structures that push hard for new forms of organization in response to the novelty

and surprise that are the hallmarks (and fun) of play. Play, in other words, is a dynamic knowledge system that fluctuates at the edge of children's capabilities. It is, as Vygotsky (1967) astutely observed, a zone of proximal development where children try to "jump above" their everyday behaviours.

Children's knowing in play, we must remember, is *in* the doing of it and thus is one continuous activity that plunges forward in real time. It's not easy to untangle what children know from within the densely nested layers of their play actions. But it is possible to some extent. We can trace and study action sequences or schemes that propel the play forward; we can document the language children use to accompany and guide their play interactions; and we can gather motor, social, linguistic, and cognitive clues that point to patterns in children's thinking, notions, and problem solving. Using a strong observational lens, we can make more explicit the intelligent knowing situated in the folds of authentic play activity.

Knowing how

Before using this observational lens, we need to be mindful that early literacy knowledge is not singular in nature. Rather, it is composed of various types of knowledge (Garner 1990; Farnham-Diggory 1994). One of these is procedural knowledge, or *knowing how*, which is made visible in literacy skills, habits, and routines. For example, when Sara works hard to write her name on her grandmother's birthday card, she displays her know-how about making and sequencing the letters that form her name. Similarly, when playing restaurant, Sara takes orders, revealing her reading and writing know-how. In young children, procedural knowledge is often a case of doing literally what they see done, which can be at once quite remarkable but also naïve. Envision three-year-old Carmen, perched on the table in the house-keeping corner, reciting her favorite storybook from cover to cover with amazing accuracy, all the while holding the book upside down.

Knowing that

On the other hand, declarative knowledge, or *knowing that*, includes the factual information about the formats (such as lists), print details (like alphabet letter names), and purposes of literacy (such as labels to claim ownership). Knowing that envelopes have stamps or that scribble isn't real writing or that C-L-O-S-E-D spells *closed* are examples of declarative knowledge.

Knowledge that is declared involves words and is reflected in children's use of terms, labels or vocabulary. Brian tells Dana, for example, that her name is spelled D-A-N-A and goes on to inform her that her name has four letters, but not really, because two are the same (a bit of four-year-old logic that serves only to perplex Dana for some time about the spelling of her name). Very young children's declarative knowledge tends to lag behind procedural knowledge, since they can more easily act out what they see done with writing and reading than say what they know or theorize about literacy.

Knowing when

Literacy also involves strategic knowledge or *knowing when* to use certain skills and behaviors to accomplish communicative goals. Gathering the necessary materials to write a letter, asking for help while reading a story, or self-correcting a spelling mistake are examples of strategic knowledge. Where children are, who they are with, and their purposes heavily influence the strategies they call up to solve literacy problems (Butterworth 1993). More personally meaningful situations, such as spelling words to invite friends to a birthday party, tend to exact a fuller range of problem-solving strategies than do more contrived situations, such as spelling words for a test. Real problems connected to their everyday lives – like deciding whose turn it is, establishing rules about feeding the classroom pet, or making plans for changing the dramatic-play setting from a post office to a garage – provide a sense of immediacy, a kind of literacy emergency that demands children's best thinking to arrive at solutions.

With these three types of literacy knowledge in mind, let's look into play activity and spotlight children's *knowing in doing*:

- **knowing how** – We will look first at thematic routines, such as cooking or taking care of the baby, that children use to organize their play and move it forward.
- **knowing that** – Next we examine children's role-taking, wherein they often *name* who they are and attempt to use the lexicon of the role, for evidence of declarative knowledge.
- **knowing when** – Finally we focus on problem solving, as children demonstrate they know when to use appropriate strategies to maintain the integrity of the play.

Bringing into fuller view what children know, do, and value about reading and writing in their play not only enlightens our understandings of young children's literacy but also challenges us to consider how we might better support them both in and out of play situations. (Note: All examples that follow are drawn from Neuman & Roskos 1997).

Routines that show knowing how

Everyday life is filled with routines that use literacy for getting, giving, and writing down information (taking telephone messages, writing shopping lists, looking up programs in the television guide, and so on). Being ever watchful and opportunistic, young children seize and adapt routines to their own purposes. Let's explore the literacy know-how of two four-year-olds as they play restaurant. Joey is pretending to be the waiter, while his pal Michael is a rather abrasive customer.

Joey: What do you want? [*pointing to the menu*] This or that or that or that? Eggs?

Michael: I want eggs. I want my eggs. Fried eggs. [*Joey writes this down.*] Two more eggs. [*Joey continues to write and then hands Michael the check.*]

Michael: Here, here. Hey! Wake up, here [*gives Joey play money*].

Even in this short exchange we see evidence of procedural knowledge in use. Joey knows how to use the menu as a reference tool, pointing to different entrees. He knows how to record the order by writing it down on the order pad and how

to transact payment for the meal. Similarly, Michael knows how to use the menu as a source of printed information and how to pay his bill. The structure of the routines activates the boys' literacy knowledge, which is expressed in physical actions that are literacy-like, such as pointing to words and making marks on an order pad.

As teachers, we can look at this evidence of the boys' literacy know-how from two angles. From one perspective, we recognize the close tie between children's literacy behaviors and the settings with authentic literacy objects and routines provide structures (representations), information, and materials (such as the menu, order pad, and pencil) to support and instigate children's literacy interactions. These external supports in a sense assist children's thinking in the course of their doing literacy activities. Play settings are not simply stages on which activities are performed but rather physical and social support systems that encourage children to shape and direct activity. But an abundance of literacy props alone will not suffice; teachers need to select and organize them in ways that "fit" the situation so as to guide and inform children's actions.

From another angle, we see what may have been overlooked in previous observations of early literacy behavior. Children's action performances in literacy routines (for example, taking an order, making a shopping list, writing signs and messages) may reflect an early form of cognitive activity that scaffolds the constructing of literacy knowledge. In other words, the action (or doing) helps carry literacy information from hand to mind. When children participate in these action sequences, they experience literacy as an intellectual tool integral to the routine and in so doing encounter the purpose of print. Repeating such experiences, they begin to form tentative maps as to what written language is for and how it works. Thus, while it's not clear how play with routines might contribute to overall literacy knowledge, such activity does appear linked to children's emerging procedural knowledge (Jacob 1984; Neuman & Roskos 1997).

If we accept Bruner's (1984) proposition that know-how is an early form of representation, then participation in setting-specific literacy routines affords children an opportunity to express their know-how and to elaborate on that knowledge. In this respect, participating in a holistic form of play is an important phase of literacy discovery and learning that facilitates knowledge building and creates pathways to more elaborated expressions of literacy behavior.

Roles that show knowing that

Roles carry with them certain forms of knowledge and responsibilities. When a child says, "You be the mom, and you be the dad, and I'm the daughter," she realizes that each will have to know and do specific things to play the part. Observing children in their play roles, we see illustrations of their declarative knowledge about individuals in familiar literacy-related contexts (mail carriers, waiters, doctors, nurses) and the ways in which they function. In the following example, Christine demonstrates not only explicit but also implicit knowledge of the authority role of doctor as she prescribes medication for her pretend patient Kara.

Christine: *[with clipboard and pen, speaking to Kara]*

We need... we have to have you take these pills.

[Whispers to nurse Colleen, who also has a pencil and pad] 14-45-14.

Colleen: Okay. 45-45-45 *[to the staff at the reception desk who are keeping the patient's chart]*.

Christine: *[to Kara, the patient]* And you gotta take these pills. Don't drink juice or ginger ale or soda with 'em.

Kara: Just water?

Christine: Yeah, or tea. Something that will agree. Remember, take this pill with milk, this one with tea, and this one with water. *[To nurse Colleen who is writing this down]* 72-22-79.

Playing the doctor, Christine expresses by her actions and tone that she knows that doctors hold positions of authority, dispense medicine, and provide clear directions. She knows that doctors are in charge, as indicated by her repetition of random numbers to her assistants (who, in their roles, know to write down such information). She

also knows that certain vocabulary and literacy objects fit this situation – for example, directions for taking pills and information recorded on a clipboard or chart. Her role taking is a means for declaring what she knows about literacy in this context.

What can we as teachers of early literacy learn from this play? First, role taking facilitates the expression of declarative forms of literacy knowledge because it demands specific uses of action and language. To play the doctor, Christine has to act and talk like a doctor, which means she has to call up what she knows about the role and effectively communicate it to others. While appropriate props and cooperative peers can assist her in carrying out the role, the burden of proof that Christine indeed is the doctor resides in her "talking the talk" and "walking the walk."

The specificity and individual accountability demanded by literacy-related role taking offer another kind of opportunity for expressing literacy knowledge and expanding on it. In fact, role taking may represent a more challenging form of literacy engagement for the young child than do routines, since it relies not only on action sequences but also the use of language in relation to them.

This leads to a second point: Roles naturally involving literacy offer children opportunities to demonstrate the full range of their declarative knowledge and, in turn, to learn from it. This returns us to an earlier point and a further elaboration of it. Access to familiar play settings with relevant literacy objects and materials encourages engagement in literacy routines, but it also stimulates social activity that can include roles such as postal officers, waiters, receptionists, and health care workers. When children assume these roles, they reveal their understandings of the literacy incorporated into them and make it visible to their peers, as in mail officer Analisa responding to Leon, "They're stamps. You put them on this [envelope]. Stickers doesn't look like this." A variety of familiar social settings in the play environment therefore offers a diversity of literacy-related roles, which increases the probability of individual children experiencing them and also

widens the circulation of literacy information for knowledge building. Role taking, in other words, is another way of presenting and encouraging literacy knowledge – one that pushes for verbal declarations as well as procedures.

Problem solving that shows knowing when

As in everyday life, lots of practical problems arise in the course of play, necessitating solutions and rules. Claudine needs more stamps at the post office. In the house corner, both Rachel and Connie want to be the mom. Nearby, Anthony isn't quite sure if the library corner sign says Open or Closed. For play to progress, such dilemmas need to be solved: How do you get more stamps? What do you do to choose a mom? How do you find out if a sign says Open or Closed? To figure out these things, children employ strategies to generate solutions and to monitor the success of their understandings. The strategies used to resolve play dilemmas illustrate children's strategic knowledge or knowing when to do what, given a set of conditions.

We can observe strategic knowledge in action in the episode below as Sebastian and Mary Kate carry out a transaction at the post office. Strategies they use to monitor their problem solving are indicated in parentheses.

Sebastian: [to Mary Kate] Put on the price 269293 for those stamps. Oops, I'm the guy who does that, right? (self correcting) I can do that, right? [looks at Mary Kate] Because I'm the cashier, I'm supposed to do it. (checking)

Mary Kate: [nods]

Sebastian: This is three dollars, right? (checking) What's a letter? (seeking information)

Mary Kate: That's how much for a letter. [shows him] (correcting)

Sebastian: A letter is three dollars? (checking)

Mary Kate: A letter is one dollar. (correcting)

What is remarkable about this example is the preschoolers' intentional pursuit of their goals, calling into action their budding attempts to self-monitor their own understandings to accomplish what they set out to do. Taking his role as cashier very seriously, Sebastian catches himself in his own

mistake of asking Mary Kate to make prices (that's not her role) and checks to make sure that prices are right (a letter is \$1.00, not \$3.00). Working in partnership with Sebastian, Mary Kate provides necessary feedback that assures the steady progress toward their jointly held aim – playing cashier.

Both children must employ monitoring strategies to further their play interests and, in so doing, they express their awareness of a goal and their knowledge of how to achieve it. We see evidence, in short, of strategic knowledge – thinking about one's own actions and applying an appropriate strategy, such as checking, to adjust those actions toward a specific outcome.

Two important observations about strategic knowledge surface from Mary Kate's and Sebastian's play. Taking the broader one first, the pair's problem-solving behaviors show that young children are quite capable of intentional behaviors under certain circumstances (Brown & DeLoache 1978; Bjorklund & Green 1992; Rowe 1998). When situations are familiar, supportive, and geared to their interests, young children activate problem-solving behaviors. They indicate an awareness of a goal and an understanding that something needs to be done to reach that goal. Calling upon strategies like checking, seeking information, and correcting, they work their way intelligently toward achieving their intentions. Play, as developmentalists have long argued, provides optimum conditions for exercising the processes and skills of intentional, planful behavior, accounting to some degree for the necessity and prevalence of play in the early years of life (Vygotsky 1967; Bruner 1972).

We see children's strategic knowledge applied to literate acts. To carry out his cashier's role, for example, Sebastian is drawn to the literacy that it involves, and he is encouraged to monitor his own literacy actions and understandings to realize his intentions. To play along, Mary Kate also must pay attention, showing that she knows when to offer literacy information to assure continuity in the play. As a familiar arena for literacy-related activity, play offers one of the first real opportunities for problem solving in relation to personally motivated literacy goals – for making predictions about writing and

reading, checking them out, and incorporating literacy information into the realization of larger purposes. Play, in fact, may be an especially fortuitous context for young children to show they know when to do what needs to be done with literacy-related problems, since it invites active participation and risk taking.

Connections with literacy learning

Children often weave their literacy-related know-how, concepts, and strategies into play-related routines, roles, and shared goals. The literacy they know is tightly woven into what they do. Children use literacy to think, even though their demonstrations of knowing how, knowing that, and knowing when depend heavily on where they are, who they are with, and the literacy tools and objects at hand. They grapple with literacy information, although their behaviors appear incidentally and spontaneously in the pursuit of more meaningful play goals. They actively use and construct literacy ideas to solve problems, albeit in holistic and undifferentiated ways. While these highly contextualized forms of literacy knowledge contrast sharply with more visible, specific, and explicit forms, such as storybook reading or alphabet knowledge, they offer an important kind of early literacy experience along two learning dimensions. One is characterized by children's engagement in the familiar and obvious, and the stability it brings. The other has to do with encountering the unfamiliar and unexpected, and the change it generates.

The *familiar* and *obvious* arises from children's participation in the everyday literacy practices that surround them. These experiences are the wellspring of their emerging knowledge of literacy as an activity. In their play interactions, children use their knowledge, manipulating and adapting it to their own purposes. As they do, they emulate what they observe and practice what they know, thus stabilizing their emerging ideas in the bedrock of personal, meaningful experience. Such successes are satisfying and lay the foundation for a growing sense of self-determination and engagement that may serve children well in the demanding

instructional situations likely to be encountered in the elementary grades. Play activity, in this sense, offers a safe and supportive environment for trying one's hand at literacy in different ways at different times – putting literacy knowledge into action.

Still, much of play's delight is in the *unfamiliar* and *unexpected*. This characteristic works to children's literacy learning advantage in the early years. Exposed to new literacy concepts and information offered by the play environment, children are challenged by surprising facts and puzzling, even shocking, ideas that invite adaptation and clarification of existing knowledge. When Cindy, for example, tells Maria, "You don't write on money," Maria stops and counters with a defensive "I know." While literacy activity in play situations may not focus on getting things right in a conventional sense, it does provide opportunity for getting better at it – for bringing the complexities of literacy more fully into the compass of young children's minds.

Limitations and conclusions

We need to keep in mind that literacy knowledge gleaned in play is different from that gained through direct instruction in important ways and cannot be substituted for it. Literacy knowing in play typically arises out of immediate practical activity and is heavily supported by the context in which it occurs. It is situation dependent and therefore limited in its range and power, which is to say that children cannot easily carry it into new situations. In classroom teaching, on the other hand, children are helped to "disembed" their literacy knowing from the well-supported contexts of real experiences (such as active play); they learn skills and strategies that allow them to carry what they know about reading and writing into increasingly more varied and more abstract situations far removed from immediate realities.

The play context as a learning site has other limitations as well. What play affords in the way of literacy may not be seized by some children who find greater satisfaction in other dimensions of the play environment. For example, some children are fascinated with spatial qualities of objects and

prefer to spend most of their playtime engaged in construction activities (Shotwell, Wolf, & Gardner 1979).

It is also important to acknowledge that, just as children can witness and practice sound literacy routines and skills, they can also experience faulty ones that may lead to misconceptions and erroneous notions. Moreover, the conditions of play may not adequately support children's learning of certain print conventions and specific literacy skills critical to literacy advancement.

These limitations, however, do not devalue the literacy potential of the play situation nor diminish its capacity to make visible children's thinking about literacy. Rather, they help clarify play as one kind of literacy experience that, in combination with other types of experiences, contributes to the provision of healthy, hearty, and happy literacy learning environments for young children. As teachers and caring adults we can capitalize on play's potential, posing questions and seeking answers that help children assemble literacy knowledge and carry it with them into newer, wider, and different worlds.

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Teachers can maximize early literacy opportunities in play by providing physical and social support systems that embed reading and writing in play situations. Here are four simple steps.

1. Create literacy-enriched play settings.

Add literacy materials to the areas where children engage in play. This includes the ever-popular dramatic play and block areas but also can include the table toy area, playground, and elsewhere. Think about, then provide materials appropriate to the situation. Create an integrated system evoking activities that will help children construct desired literacy concepts. For doctor play in the dramatic-play center, for example, supply an appointment book, patient file folders, prescription pads, empty pill bottles, magazines, and books. For road and bridge building in the block area, provide paper and markers for making highway signs and billboards. In the wheeled vehicle area of the playground, a couple of well-placed pencils and pads encourage traffic officers to write tickets for errant motorists.

2. Encourage children to act out roles that naturally involve literacy. While theme-related literacy objects prompt many children to adopt roles, some children need extra help with role playing. Dress-up clothes evoking a specific role can help. A white smock, for example, encourages children to play doctor, and a helmet and badge invite them to become police officers. A teacher can become a “co-player” for a time (Roskos & Neuman 1993), joining the play to model, say, a firefighter. The children soon will be saving lives, keeping logs, writing grocery lists, and making maps, and the teacher can step out of the play.

3. Promote social interaction during play.

Play provides opportunities for children to teach each other about written language (Neuman & Roskos 1991). While engaged in such play, children often identify literacy objects (“That sign says Stop”),

negotiate the meaning of literacy routines (“You don’t buy books at a library – you ‘rent’ them”), and coach their peers to overcome literacy obstacles (“You spell it P-I-Z-A”). Teachers can encourage cooperative group play by (a) providing play/activity centers that accommodate at least four or five children, (b) scheduling lengthy play periods so children have ample opportunity to learn how to play together, and (c) closely observing the play and supplying temporary help with social problems that threaten to disrupt group play (“If you both want to be the police officer, perhaps you can take turns”). Mixed-age play groups increase the collaborative learning potential of play. Multiage classrooms are the ideal way to accomplish this (Christie & Stone 1999), but teachers also can use play-buddy arrangements with other classrooms (for example, first-graders can visit a preschool classroom during playtime).

4. Insert literacy-related challenges into play.

Play naturally involves problem solving. Children overcome many material and social obstacles to keep play going. When literacy is part of the play mix, new problems arise: figuring out a message, writing a sign, making a label. Teachers can provide temporary assistance when needed. Once children are good at solving everyday play problems, we can up the ante by applying Nigel Hall’s (1999) strategy, intentionally creating a real problem or challenge that requires a literacy solution. In Hall’s example, a preschool class is in the process of setting up a mechanic’s garage play center when they get a letter from a neighboring teacher. The letter states that the class should stop the project because garages are noisy and dangerous places. The preschoolers take on the challenge and draft letters – guided by their teacher – that convince their neighbor that they will keep a safe and quite shop.