

FIRSTHAND LEARNING THROUGH INTENT PARTICIPATION

Barbara Rogoff,¹ Ruth Paradise,² Rebeca Mejía Arauz,³
Maricela Correa-Chávez,¹ and Cathy Angelillo¹

¹University of California, 277 Social Sciences 2, Santa Cruz, California 95064;

e-mail: brogoff@cats.ucsc.edu, mcorrea@cats.ucsc.edu, angelill@cats.ucsc.edu

²Departamento de Investigaciones Educativas del Centro de Investigación y de Estudios Avanzados del IPN, Mexico City, Mexico; e-mail: paradise@mx.inter.net

³ITESO University, Guadalajara, Mexico; e-mail: rebmejia@iteso.mx

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■ **Abstract** This article examines how people learn by actively observing and “listening-in” on ongoing activities as they participate in shared endeavors. Keen observation and listening-in are especially valued and used in some cultural communities in which children are part of mature community activities. This intent participation also occurs in some settings (such as early language learning in the family) in communities that routinely segregate children from the full range of adult activities. However, in the past century some industrial societies have relied on a specialized form of instruction that seems to accompany segregation of children from adult settings, in which adults “transmit” information to children. We contrast these two traditions of organizing learning in terms of their participation structure, the roles of more- and less-experienced people, distinctions in motivation and purpose, sources of learning (observation in ongoing activity versus lessons), forms of communication, and the role of assessment.

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INTRODUCTION

Children everywhere learn by observing and listening-in on activities of adults and other children. Learning through keen observation and listening, in anticipation of participation, seems to be especially valued and emphasized in communities where children have access to learning from informal community involvement. They observe and listen with intent concentration and initiative, and their collaborative participation is expected when they are ready to help in shared endeavors. This tradition, which we refer to as *intent participation*, is prominent in many indigenous American communities and can also be seen in voluntary organizations, interactive museums, and collaborative schools in middle-class U.S. communities.

Intent participation is a powerful form of fostering learning. It contributes to impressive learning such as that accomplished by young children learning their first language and continues in importance throughout life. However, it has received relatively little research attention. It seems often to be taken for granted or overlooked, perhaps because researchers are especially familiar with contrasting instructional approaches used in schooling (based on researchers' own learning history as well as teaching roles).

Our aim is to articulate the multifaceted features of intent participation. To do so, we contrast it with *assembly-line instruction*, which is based on transmission of information from experts, outside the context of productive, purposive activity. This tradition of organizing learning is common in many U.S. schools and middle-class family interactions, perhaps related to historical changes connected with industrialization and child labor laws, which have contributed to compulsory extensive schooling and routine segregation of children from many mature settings.

Our contrast between intent participation and assembly-line instruction is not a dichotomy or a single dimension—there are many other traditions of organizing learning. The contrast is intended to bring features of each of these two systems into relief. The bulk of our paper focuses on examining contrasting features of the two traditions: the roles taken by more- and less-experienced people, the motivation and purposes of activities, the source of learning (observation in ongoing activity or lessons), forms of communication, and the nature of assessment.

First, however, we summarize research indicating that learning through observation and listening-in is pervasive in children's lives and is effective. Although

we argue for cultural differences in emphasis on this kind of learning, observation and listening-in are important for all children.

PERVASIVE LEARNING THROUGH OBSERVATION AND LISTENING-IN

Young children are widely known to monitor events around them, learning through observation (Piaget 1962, Trevarthen 1977, Yando et al. 1978, Maccoby & Martin 1983, Uzgiris 1984, Bandura 1986, Meltzoff & Moore 1998, Tomasello 1999). For example, toddlers are often attracted to an object they observe an adult using and engage in similar actions with it (Eckerman et al. 1979, Hay et al. 1985); they evaluate the character of a stranger by observing the reactions of others (Feiring et al. 1983). Children's learning through observation goes far beyond mimicking what they see and hear.

Children's language development is a prime example of the power of learning through keen observation and listening (Akhtar et al. 2001). For example, by monitoring and emulating the language others use, very young children in a number of communities develop an understanding of what language use is appropriate, learning to speak to others with the appropriate respect forms and personal pronouns—usage that requires avoiding forms adults use to address them (Ochs 1988, Oshima-Takane et al. 1996).

Numerous studies in the behaviorist tradition have determined that observation can be very effective for learning (Abravanel & Ferguson 1998). For example, children can learn complex concepts (such as conservation, rules of games, categorization schemes, and rules of syntax) from modeled examples, without explanations (Zimmerman & Rosenthal 1974). Although rewards are sometimes influential (Bandura 1986), often children repeat an observed behavior privately over long periods of time without any reinforcing consequences, after having observed an unrewarded behavior on only a few occasions (Aronfreed 1969). For example, after exposure to models who were reading aloud, preschool children spontaneously picked up books and imitated the adult's reading (Haskett & Lenfestey 1974).

Robust findings indicate that people learn from observing models on television and other media. For example, children are able to learn new vocabulary words after exposure to television stories that contained those words (Huston & Wright 1998). Watching violent television in early childhood predicts later aggressive behavior (Huston & Wright 1998, Bushman & Anderson 2001). Similarly, even short-term exposure to video game violence is associated with higher aggression (Anderson & Bushman 2001). It is clear that highly effective learning takes place through observation of television and other media, as well as with companions.

PROCESSES OF LEARNING THROUGH KEEN OBSERVATION/LISTENING-IN

Some research has compared children's learning from observing with learning from hands-on participation. When U.S. children observed others performing an activity,

there were no differences in recall compared with children who participated in the activity directly (Baker-Ward et al. 1990). Learning in European-descent New Zealand children who had participated directly in an event did not differ from learning in those who only observed, when children showed their learning by enacting the event (Murachver et al. 1996).

The distinction between being involved directly and “only” observing may be misleading, however. Observers’ attention is likely to be quite different if they expect to be involved than if they observe incidentally. We focus explicitly on *observation as an aspect of participation*. Our term “intent participation” refers to keenly observing and listening in anticipation of or in the process of engaging in an endeavor. (We refer to both watching and listening-in as “observation,” because each involves the sort of attentiveness and intentionality that we examine in this paper. What we call “listening-in” has been referred to by other authors as “eavesdropping,” which suggests that the people listened to would object, or “overhearing,” which suggests passive chancing to hear, rather than active listening.)

The process of learning through observation likely differs dramatically depending on whether the learner is attending to a demonstration designed for their learning, a model provided by persons engaged with them but not for the purpose of instruction, or a model provided by events that are directed to someone else or have no expected audience (which they observe as a third party). However, because there has been little research making such distinctions (Lewis & Feiring 1981), our review does not distinguish between them.

Third-party observation is especially understudied, although the research on language learning and learning from the media makes it clear that it is powerful. Third-party observation appears to be especially important in some cultural communities. For example, learning through eavesdropping was emphasized in an African-American community where toddlers participated in daily community events and spent hours sitting still and listening to adults converse (Ward 1971). Similarly, in Kaluli language learning in Polynesia, little speech is directed to toddlers, but they are surrounded by people talking to each other and commenting on the toddlers’ activities within earshot (Schieffelin 1991). Inuit men of Arctic Quebec reported that as boys they learned to hunt from just watching the men and learned vocabulary and many other things by listening to stories that were not intended for them, staying as inconspicuous as possible (Crago 1992). Maori (New Zealand) adults reported that they were “sure that their parents and grandparents deliberately turned a blind eye to them hovering on the fringe of adult conversations as adolescents, allowing them to pick up information” (Metge 1984, p. 10).

In some cultural communities attentiveness may often be more limited when one is not immediately involved, compared with communities that emphasize learning through intent participation. For example, when European-American pairs of 9-year-olds were asked to teach a younger child to play a game, members of the pair often were distracted when not directly involved in the game, whereas Navajo children in the same task remained engaged, observing their partners even when they were not controlling the game moves (Ellis & Gauvain 1992).

We argue that an emphasis on learning through intent participation—though likely present in some settings in all communities—fits especially with the practices of cultural communities that routinely include children in the mature activities that are part of the community’s daily life. This integration of children in mature community activities is a key feature of a dynamic constellation of cultural practices related to intent participation.

CULTURAL EMPHASIS ON LEARNING VIA INTENT PARTICIPATION

Variation in extent of observation by children of different cultural communities has been found in several studies: Young rural Senegalese children observed other people more than twice as often as middle-class European-American children (Bloch 1989). Navajo students quietly observed teachers more than twice as often as Caucasian students in the same classroom (Guilmet 1979). U.S. Mexican-heritage children whose mothers had little experience with school were more likely to observe without requesting further information, compared with both U.S. Mexican-heritage and European-heritage children whose mothers had extensive experience with Western schooling (R. Mejía Arauz, B. Rogoff & R. Paradise, submitted).

Keen observation is often encouraged and taught, for example, in learning through watching in school and Suzuki instruction in Japan (Peak 1986). Likewise, Kenyatta (1953) noted that Gikuyu parents took care to teach children to be good observers. If Rotuman (Polynesian) children ask for instruction, “they are likely to be told to watch a skillful adult in action” (Howard 1970, p. 116).

In many communities, observation skills are emphasized and honed as people attend closely to ongoing events in order to learn the practices of their community. If children are integrated in a wide range of community settings, they are able to observe and listen in on the ongoing activities of their community as *legitimate peripheral participants* (Lave & Wenger 1991). In some communities, young children are included in almost all events. Infants who are routinely carried wherever their caregivers go can attend to their ongoing activities (Désalmand 1983, Whiting & Edwards 1988). For example, Aka parents (in Central Africa) hunt, butcher, and share game while holding their infants (Hewlett 1992).

Mayan toddlers in the Yucatan are permitted to go where they like, so they have opportunities to note the moment-to-moment happenings of their extended family (Gaskins & Lucy 1987, Gaskins 1999). In Kokwet (East Africa) 2- to 4-year-olds spent much of their time watching the activities of family members (Harkness & Super 1992). In a Guatemalan Mayan town, a foraging community in the Democratic Republic of Congo, and a tribal community in India, young children routinely had access to their families’ economic activities—weaving, shopkeeping, gathering food, or working in fields or factories (Morelli et al. 2003, Morelli & Tronick 1992, Rogoff et al. 1993).

Children in many communities begin to participate in work and other mature activities from age 3 or 4 (Chamoux 1986, Martini & Kirkpatrick 1992). In a farming community in East Africa, 3- and 4-year-old children spent 25–35% of their time doing chores, whereas middle-class U.S. children of the same ages spent only 0–1% of their time doing chores and 4–5% of their time accompanying others in chores (Harkness & Super 1992).

By 5–7 years of age, children in many communities have substantial responsibilities for child, animal, and household care, participating in most adult activities (Rogoff et al. 1975, Paradise 1987, Whiting & Edwards 1988). When young children are included in the social as well as the economic life of their community, they are participants in the adult world, not “in the way” (Nsamenang 1992).

The opportunities of children in the United States and a number of other nations to participate in a wide range of mature community activities have decreased dramatically over the past century or so. These children are increasingly involved, instead, in specialized child-focused activities—especially schooling—designed to instruct them in skills to be employed in adulthood once they are allowed to be involved in mature activities.

HISTORICAL CHANGES SEGREGATING U.S. CHILDREN FROM MATURE ACTIVITIES

During the twentieth century U.S. children’s opportunities to observe and participate in mature activities have been greatly curtailed. In the colonial period the workplace and the home were typically not separated, and young children participated skillfully in family work as well as community social events (Chudacoff 1989, Hareven 1989). In the early 1800s, about 70% of U.S. children shared farm work with their family (Demos & Demos 1969, Hernandez 1994). As industry replaced farming, opportunities declined for children to learn work skills at home.

Children in industrialized communities are now excluded from many mature settings, making it difficult for them to observe the full range of their community’s activities (Hentoff 1976). They often stay in settings in which the adults’ primary activities are to tend them and the home or school facility and not often to engage in the wider range of work and social activities of their community (Morelli et al. 2003, Whiting & Whiting 1975, Rogoff et al. 1993). [However, U.S. children whose parents work at home are often involved in their parents’ work, in a progression from watching, to carrying out simple tasks, to giving regular assistance, to regular work (Beach 1988)].

Over the past century, efforts to protect U.S. children from economic exploitation, to extend their schooling, and to remove them from economic competition with adults have reduced their chances for learning firsthand about adult work and other mature activities (Bremner 1971; Chudacoff 1989). At the beginning of the 1900s child labor laws were introduced in the U.S. to protect children from

exploitation in factories. (The primary workforce of the early factories was young children, often ranging in age from 4 to 10 years.)

As industrialization spread, schooling was made compulsory and the amount of time spent in school increased. This further limited U.S. children's opportunities to participate in the mature activities of their families and communities (Chudacoff 1989, Hernandez 1994). Schools began to serve a wider segment of the child population as a specialized child-focused setting that provided exercises to get children ready for later "real world" work, generally without direct contact with actual mature activity (Dewey 1916, Scribner & Cole 1973, Greenfield & Lave 1982, Désalmand 1983).

Limited opportunities to observe and participate in adult activities may restrict U.S. children's understanding of the mature roles of their community (Panel on Youth of the President's Science Advisory Committee 1974, Rogoff 1990). Now, instead of routinely helping adults, children are often involved in specialized child-focused exercises to assemble skills for later entry in mature activities from which they are often excluded in childhood. These specialized child-focused situations—especially schooling, but also pre-school lessons and child-focused conversation in families—often employ instructional practices and a concept of learning that were heavily influenced by the organization of factories, forming a cultural tradition that contrasts with intent participation.

SPECIALIZED CHILD-FOCUSED INSTRUCTION IN SCHOOL, ORGANIZED ON A FACTORY MODEL

In U.S. classrooms children's learning is often assumed to occur primarily by means of the teacher's provision of information, in what has been called a factory model (Callahan 1962). The factory-efficiency approach to learning and teaching is a tradition that became widespread around 1900. It was based on Taylor's time-and-motion studies of steelworkers for industrial efficiency and began to be applied to education to achieve bureaucratic efficiency in the face of enormous growth in student populations. (In 1890 only 4% of U.S. youth graduated from high school. By 1940 half of U.S. youth did.)

Teachers were cast as technical workers who were supposed to insert information into the children, who were seen as receptacles of knowledge or skill. The information itself was broken into bits to be delivered in a specified sequence, like an assembly line. According to the leading educational administration textbook in 1916, written by Stanford's Dean of Education,

Our schools are, in a sense, factories in which the raw products (children) are to be shaped and fashioned into products to meet the various demands of life . . . It is the business of the school to build its pupils according to the specifications laid down.

(Cubberley 1916, p. 338)

In a factory model the teacher strives for efficiency in the delivery of knowledge and applies incentives (or punishments) to induce children to cooperate in the production process. The students cannot speak or help each other without permission from the teacher. The teacher “delivers” the curriculum using specialized forms of discourse, especially quizzing (in which the teacher asks questions to which she knows the answer and evaluates the student’s response) to test the receipt of information. Often the teacher directs children’s actions without explaining a rationale (see Mehan 1979, Cuban 1984, Gutierrez 1992, Mercer et al. 1988, Hargreaves 1989, Wells 1992, Minick 1993, Rogoff et al. 1996, Matusov & Rogoff 2002).

The idea that learning occurs as a product of “transmission” of knowledge remains a common conceptualization of learning, although U.S. school reform efforts continually attempt to move beyond the transmission model. Some schools do operate according to philosophies related to intent participation (although as specialized child-focused settings, they are distinguishable from family- and community-based traditions in which children are largely integrated in community activities). Nevertheless, analyses of pedagogy in the Third International Mathematics and Science Study noted that U.S. schools still retain a characteristic ideology based on the factory model (Stedman 1997).

Sometimes educational philosophies portray the learner rather than the teacher as the active agent, and then we find the metaphor of acquisition rather than transmission. In both approaches, however, learning is seen as accretion of information or skills, brought across a boundary from the external world to the mind of the learner (Rogoff 1990; Rogoff et al. 1996). This approach to learning has been questioned by sociocultural scholars. Several have proposed instead the idea that learning is a process of transformation of participation in ongoing cultural activities (Rogoff 1990, 2003; Lave & Wenger 1991).

Contrasting with transmission and acquisition models, in intent participation, learners engage collaboratively with others in the social world. Hence, there is no boundary dividing them into sides. There is also no separation of learning into an isolated assembly phase, with exercises for the immature, out of the context of the intended activity.

SPECIALIZED CHILD-FOCUSED INTERACTIONS IN FAMILIES WITH EXTENSIVE SCHOOLING

Within families in communities that emphasize learning in schools, out of the context of shared, productive community endeavors, some features of the factory model can be seen in interactions between young children and their parents. In middle-class European-American families—the primary participants in research on child development—parents often engage with young children in specialized child-focused activities that may help prepare the children for schooling and for their later admission into adult settings. These activities include child-focused conversations that often involve lessons and school-like discourse formats (Blount

1972, Harkness 1977, Heath 1983, Schieffelin & Ochs 1986, Haight 1991, Rogoff et al. 1993).

Middle-class conversational practices may help prepare children for the transmit-and-test formats of school (Beals & Tabors 1995). For example, middle-class caregivers in the United States and Turkey often provided their toddlers with language lessons in a quizzing format like that of factory-model schools. In contrast, Mayan and tribal Indian toddlers were seldom given school-like language quizzing games; they interacted reciprocally with their parents through communication surrounding joint action (Rogoff et al. 1993).

Caucasian families in Hawaii used lesson-style ways of speaking at mealtimes, facilitating success in schools that use the same formats and participation structures (Martini 1995, 1996). Parents asked children to talk about their day and helped them organize their "report" by recasting what children said in conventional forms. Parents protected a child's turn from interruptions, and children sometimes used school ways to get a turn, such as raising their hands.

A study of young children's everyday activities supported the idea that there would be more specialized, child-focused activities accompanying limited access to adult work for 3-year-olds in middle-class families than in two communities where older children routinely contribute to family work (Morelli et al. 2003). In two middle-class European-American communities, 3-year-olds had less opportunity to observe adult productive work and were more often involved in lessons and scholastic play than in an Efe foraging community in the Democratic Republic of Congo and a Mayan town in Guatemala.

In communities in which young children are involved in the mature activities of their family and community, it may be superfluous for adults to organize lessons and specialized conversations to prepare young children with the skills of schooling, to prepare them for the "real" world. Instead of doing exercises out of the context of the productive use of skills and information, young children's integration in family and community activities allows them to become increasingly deeply involved through their intent participation.

TWO MULTIFACETED TRADITIONS FOR ORGANIZING PARTICIPATION FOR LEARNING

Contrasting processes are involved in *intent participation* as people engage together in a common endeavor and in *assembly-line instruction*, based on transmission of information from experts outside the context of purposeful, productive activity. Although the contrast we present has some resemblance to comparisons of formal and informal learning, we do not see the two traditions as dichotomous. Intent participation and assembly-line instruction are only two of many ways to organize learning. (Other ways would include such traditions as Socratic dialogue, inquiry learning, repetition/reciting, and constructivist discovery, which may share some features and differ in others.)

We see the two traditions as descriptions of *processes*, whereas the informal/formal dichotomy is often applied to *places*. Our distinction is not tied to locales or settings. Although the assembly-line approach may stem from factories and schools, it can occur in many other places, such as family settings. Likewise, intent participation can occur in innovative schools (Dewey 1916, Rogoff et al. 2001).

Any setting may mix these two traditions (and others). For example, in supporting early language development, some families use both assembly-line and intent participation traditions, by quizzing toddlers on vocabulary and by conversing with them to accomplish everyday endeavors together. In schools organized in assembly-line instruction, children often use intent participation to learn to engage in or resist the authority relations and the lesson format of the assembly-line structure itself.

Use of the two traditions is dynamic, not fixed and stable. Mothers from non-industrial communities who have experience in Western schooling more often interact with children in school-like ways—with greater use of praise, language lessons, and assignment of divided tasks—than mothers with little or no schooling (Rabain-Jamin 1989, Richman et al. 1992, Rogoff et al. 1993, Chavajay & Rogoff 2002). Likewise, middle-class parents with experience of helping in a collaborative school are more likely to engage with children in ways that fit with intent participation (Rogoff et al. 2001, Matusov & Rogoff 2002).

The processes of intent participation and assembly-line instruction are not necessarily tied to the type of activities or domain of knowledge (such as practical versus theoretical endeavors or concrete versus abstract information). The distinction is in the form of involvement, not in the subject. For example, either form of participation can be found in the learning of statistics. Learning can occur through intent participation as one learns how to use statistics to carry out ongoing research, or through assembly-line instruction in a class where the material is studied in isolation from its use, without any involvement in research. Likewise, intent participation was very effective for children's learning of both abstract spiritual knowledge and practical skills when Maori (New Zealand) community life was pervasive and strong (Metge 1984).

In the remainder of the article, we contrast different facets of each multifaceted tradition. The facets are not separate, isolated "variables" or a collection of dimensions, but rather are integrated to form each tradition (Rogoff & Angelillo 2002). In Figure 1, we represent the two traditions as multifaceted prisms to emphasize that the different facets describe related aspects of whole traditions. Each tradition undoubtedly has other important facets than the ones on which we focus in this chapter.

PARTICIPATION STRUCTURE

Intent participation involves a collaborative, horizontal participation structure with flexible, complementary roles. This contrasts with assembly-line instruction's hierarchical structure, organized with fixed roles in which someone manages others' participation, acting as a boss.

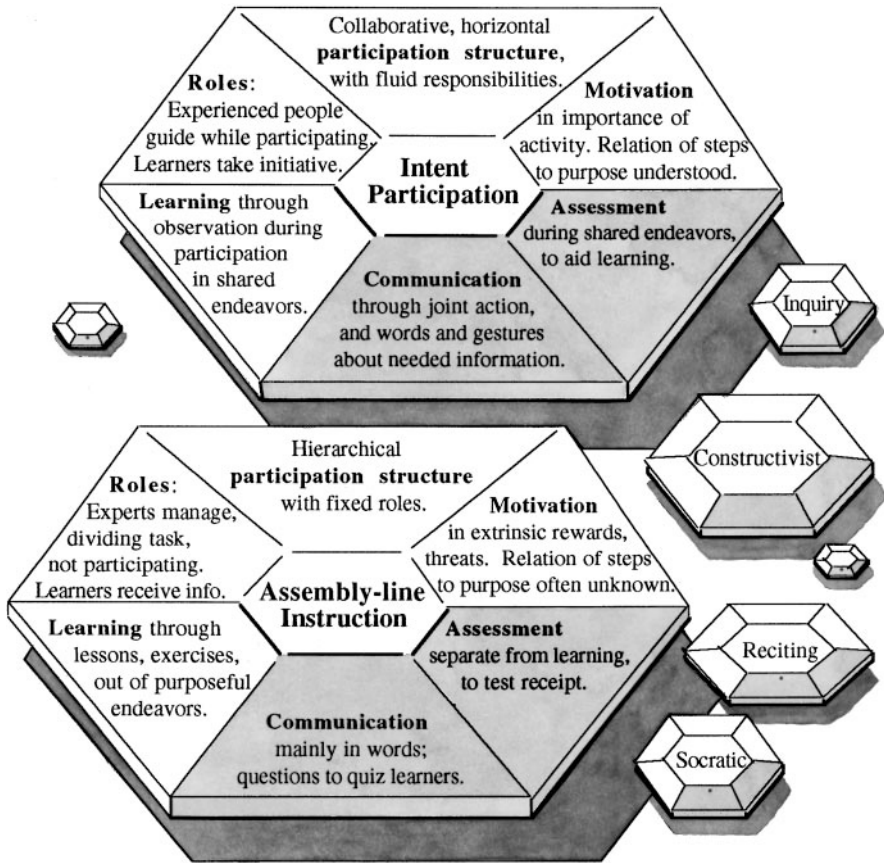


Figure 1 Multifaceted traditions for organizing learning (© B. Rogoff).

The participation structure of intent participation can be illustrated by the social organization of indigenous groups of the Americas, which often involves shared multiparty engagements among several group members, with mutual and fluid negotiation of responsibilities and consensus-based decision making (Lee 1976, Lamphere 1977, Philips 1983, Paradise 1987, Rogoff et al. 1993, Sindell 1997). Pelletier illustrated such horizontal organization of indigenous groups in his description of problem solving among Canadian Manitoulin people, in which everyone pitched in as needed, and no one was in charge.

If somebody died in the community, nobody ever said: We should dig a grave. The grave was dug, the box was made, everything was set up . . . the one who baked pies baked pies. Everyone did something in that community, and if you tried to find out who organized it, you couldn't.

(Pelletier 1970, pp. 26–27)

Similarly, in traditional Mazahua Mexican leadership, elders protect and guide rather than give orders or dominate (Paradise 1987). Group integration involves each individual following his or her own path in a smoothly functioning coordination with others that is not preplanned or directed.

People may apply their experience with a particular participation structure in new settings. For example, in school, indigenous children often attempt to collaborate with classmates even when teachers discourage them from doing this (Philips 1983, Wolcott 1997). Likewise, some teachers with indigenous background employ the horizontal, collaborative structure of interaction that seems to be common in indigenous communities. For example, Alaskan Native teachers and aides often show a more even distribution of speech and turns at speaking among students and teachers than do European-descent teachers. In addition, they foster speaking as a group rather than calling on individuals in sequence, as in the following observation of an elementary classroom:

The [European-descent] teacher had arranged the desks of her several students into a large rectangle, and had the students face her and look at her. Her lesson format [was to ask] a question, [wait] for the children to raise their hands to be nominated, and then [call on] a single student to answer . . . Student responses were brief, in keeping with the focused information requested in the question.

In another corner of the room, a Yup'ik bilingual aide [worked on a story with some students who] were not facing the bilingual aide directly. The aide allowed the students to speak 'out of turn'—that is, without being nominated by herself and without waiting for a student who already had the floor to finish speaking.

[At one point, the teacher walked over.] She told the students to face the aide, straighten their chairs, and pay attention . . . After the teacher had left and the aide resumed the story lesson, the students were reticent and spoke very little. [The aide later commented that the Yup'ik way of instructing is a conversation in which students] speak to each other freely, helping each other out on a subject . . . They build on each other.

(Lipka 1994, pp. 64–65)

Although some indigenous teachers working in Western schools organize their classrooms to support horizontal interactions, for others, their acculturation in mainstream pedagogy may result in directive, hierarchical organization (Barnhardt 1981; Erickson & Mohatt 1982; Lipka 1991, 1998).

Hierarchical organization experienced in schools may be extended into participation structures within family life. Indeed, it may replace more collaborative indigenous organization in the family when schooled indigenous individuals become parents. For example, Guatemalan Mayan mothers with 6–9 years of schooling were more likely than Mayan mothers with little or no schooling to attempt to enforce their own agendas with their toddlers—resembling European-American middle-class caregivers (Rogoff et al. 1993). Similarly, in constructing a puzzle with three related children, Mayan mothers with little schooling were usually

involved in horizontal shared multiparty collaboration, whereas Mayan mothers with 12 or more years of schooling more commonly engaged in hierarchical division of labor, assigning dyads or individuals separate tasks (Chavajay & Rogoff 2002).

Children of schooled parents may learn the participation structure of assembly-line schooling at home and use it in their relations with others. Triads of U.S. Mexican-heritage children whose mothers had little Western schooling were likely to coordinate together smoothly as they folded paper figures. Triads whose mothers had extensive Western schooling—whether of European or Mexican heritage—were more likely to work solo or in dyads (R. Mejía-Arauz & B. Rogoff, in preparation). This work suggests the importance of considering experience with cultural institutions such as schooling as a key aspect of cultural heritage.

Consistent with the difference in whether the participation structure relies on collaboration or on control by a boss, intent participation and assembly-line learning involve very different roles for both more- and less-experienced people. We address this facet next.

ROLES OF MORE-EXPERIENCED PEOPLE AND OF LEARNERS

In the intent participation tradition, experienced people play a guiding role, facilitating learners' involvement and often participating alongside learners—indeed, often learning themselves. New learners in turn take initiative in learning and contributing to shared endeavors, sometimes offering leadership in the process.

In contrast, in assembly-line instruction, experienced people manage learners' behavior and communication. They subdivide the task, often directing but not actually participating in the activity at hand. They serve as experts, and the learners, in turn, are supposed to cooperate in receiving instruction and information and carrying out assignments.

U.S. classrooms are often organized by teachers transmitting information and managing the students in exercises (Stedman 1997). This hierarchical organization of learning is exemplified by Philips' (1983) observations of a "switchboard participant structure" in which teachers decide which children contribute to class activities, when, and for how long, taking a speaking turn between each child's turn. Children address only the teacher, seldom taking other children's ideas into account in building their own contributions. Often the children are limited to responding briefly to teachers' known-answer quizzing, in the Initiation-Reply-Evaluation format observed in many classrooms (Mehan 1979, Cazden 1988, Hargreaves 1989, McCollum 1989, LaTorra & Renne 2001).

In contrast, Japanese elementary school classrooms often involve conversations in which children build on each other's ideas (Rogoff & Toma 1997, Linn et al. 2000). Indeed, Japanese first-graders take on responsibility, without direct management by an adult, for organizing the class to begin lessons, breaking into small groups to carry out and discuss science experiments, and running class meetings

(Lewis 1995). The teacher encourages the children to solve problems together and reflect on the process. Similarly, children take responsibility for classroom management without direct adult management in several indigenous and rural schools in Mexico (Paradise 1994, Mercado 2001, Bryan & McLaughlin 2002).

Within middle-class families, adults often structure young children's learning by managing children's attention, motivation, and involvement in ways that resemble lessons. For example, middle-class parents in the United States and Turkey were more likely to try to engage toddlers in the parents' own agenda (which often involved a lesson) by means of mock excitement and praise and even by overruling the toddler's own expressed wishes, than were Guatemalan Mayan and rural Indian parents (Rogoff et al. 1993). In another study, U.S. mothers took responsibility for making their toddlers learn; by arousing interest and shaping each step of the toddler's behavior, whereas Gusii (Kenyan) mothers were less managerial; they often modeled the whole performance and appeared to expect the toddler to be able to take responsibility for completing the task as shown (Dixon et al. 1984).

In teaching/learning tasks, Mazahua (indigenous Mexican) parents used a participation structure in which children were treated as responsible contributors to a shared endeavor, coordinating with their parents and sometimes leading the effort (de Haan 2001; see also Chamoux 1986). Children were expected to learn by watching the parent's actions while the children helped; if they did not observe, parents reminded them of their responsibility to watch. They were expected to take on more responsibility as the joint activity proceeded, but were not forced to. In contrast, when Mazahua children worked individually with non-Mazahua teachers, the teacher held the initiative and expected the child individually to perform the task under the teacher's direction. Children's suggestions were evaluated by the teachers as a test of the children's knowledge, not treated as a contribution to a task that needed to be done.

Efforts to transform the structure of formal schooling have encountered challenges related to adults' difficulties in learning to engage in radically different participation structures. For example, in a collaborative school in the United States, parent volunteers often took several years to move beyond the issues of control that characterized their own assembly-line schooling, to develop a collaborative approach with the children (Rogoff et al. 2001, Matusov & Rogoff 2002). Being accustomed to the transmission model, they often found it especially challenging to work with student interest and initiative in shared endeavors.

MOTIVATION AND PURPOSE

In the tradition of intent participation, motivation is generally inherent in the obvious importance and interest of the activity. The purpose of the activity is understood, as is the relation of each step to the overall process. For example, a collaborative U.S. class learned about measurement by designing a habitat for animals when they became concerned about the impact on birds of a loss of trees in

the neighborhood. As they designed birdhouses for the habitat, the children could see the purpose of measuring — it served a goal that made sense and was of interest to them (Goodman et al. 2001).

In contrast, in assembly-line instruction the purpose of the activity is often not accessible to the students, and the relation of each step to the overall process often not understood. Assembly-line instruction of disconnected skills and information was observed in classroom research in a report of the Third International Mathematics and Science Study:

In the U.S., education is based on an “‘incremental’ assembly line philosophy” that “encourages breaking complex learning down into simpler learning tasks” [quoting Jakwerth 1996]. An ideological faith in mass production, accompanied by a behaviorist push for programmed instruction and objectives, has splintered the U.S. curriculum into many small topical building blocks.

(Stedman 1997, p. 10)

In his classic study of informal education, Fortes pointed out that in schools, knowledge is often of unknown utility. He contrasted this with “real situations” in which the purpose of the activity is usually inherent in the situations in which people learn, and motivation derives from accomplishing real goals:

A child repeating the multiplication table is participating in the practical activity appropriate to and defined by the school; but measured by the total social reality it is a factitious activity, a training situation constructed for that purpose. The Tallensi [of Ghana] do not make systematic use of training situations. They teach through real situations which children are drawn to participate in because it is expected that they are capable and desirous of mastering the necessary skills.

(Fortes 1970 (1938), pp. 37–38)

In intent participation, the role of an aspect of the activity is understood in the context of the overall process. For example, Vai apprentice tailors have the opportunity to observe the whole process of making a piece of clothing while they contribute to aspects they can manage (Lave & Wenger 1991). Similarly, the children of French marsh-sweepers help process salt by taking responsibility for steps that they can manage, coordinating with their parents in the overall process (Delbos & Jorion 1984). Likewise, in Maori (New Zealand) communities, learners are incorporated into existing working groups with a range of expertise. They are initially given supporting tasks and work close enough to observe the more advanced participants; they move to more complex aspects of the activity as they learn (Metge 1984). This contrasts with the assembly-line approach of breaking a process down into isolated steps and having the learners practice the steps with little or no chance to see how the steps fit together or the overall purpose of the activity.

With the relatively arbitrary nature of information in assembly-line instruction, motivation for learners' involvement is often induced through praise, grades, rewards and threats that are unrelated to the activity. Praising desired behavior may seem second-nature among highly schooled people; however, in some communities it is rare (Metge 1984, Rogoff et al. 1993, Whiting 1996). Indeed, the U.S. school practice of promoting individual competition and recognition through public praise makes some students uncomfortable when it is at odds with their community ethic of collaboration in which individuals contribute their strengths to the group (Deyhle & Swisher 1997). Competitive teacher approval provides both reward and threat to induce children's compliance with assembly-line instruction.

A central topic in teacher training and student-teaching is for new teachers to develop methods to motivate behavioral control of the classroom. They are taught management techniques with rules for the students and consequences for infractions and are encouraged to be strict so the children know they "mean business," so the children will do their part in the participation structure of assembly-line learning (Ball 1980, Seaman 2001).

In the intent participation tradition, children who participate in mature activities see their efforts contribute to the family's food or cash supply. They may not need external markers of the value or correctness of what they do; success or failure of ongoing work is obvious (Whiting & Edwards 1988, Jordan 1989). Adult approval may be communicated by giving more difficult work with less supervision (Whiting & Edwards 1988). However, failure by older children to pay attention or to do a job carefully may result in scoldings or punishment in addition to the direct consequences of failure (Modiano 1973, Metge 1984).

In valued activities in which children make genuine contributions, they may often participate with eagerness, rather than with the resistance that is common in assembly-line schools (Lee 1959, Delbos & Jorion 1984, Lipka 1998, Paradise 1998, de Haan 1999, Gaskins 1999). An indigenous Mexican Mazahua mother responded to an interviewer's question about what happens if a child does not want to learn: "I have never seen anybody having trouble to show a child to get to work. . . . They themselves have interest in doing the things they have to do" (de Haan 1996, p. 8). An example of this kind of interest is provided by a two-year-old helping dig a maize field with her mother, observing and eagerly carrying out a part of the task that aids her mother's efforts.

The girl starts to remove soil from the bunches of grass her mother has just removed, making the exact same movement she has observed her mother making. Her mother stops digging and watches her. When the mother wants to continue, the girl tells her to stop as she wants to pick up a bunch of grass and remove the soil from it just where the mother wants to start digging. The mother lets her do this and waits. . . . [Soon] the girl has taken over a task from the mother so that the mother can continue digging without having to remove the grass. They work together for about five minutes. . . . When the girl sees

her mother removing the soil from the grass (while the girl was chatting) the girl protests and demands her task back.

(de Haan 1999, pp. 77–78)

In such a tradition for learning, even very young children participate productively in their parents' work activities, frequently on their own initiative, out of recognition of the importance to the family of what they are doing. The attraction of the activity itself provides a self-evident inherent motivation that is supported by parental expectations along with admonitions and direct indications as to what is to be done (Paradise 1985, de Haan 1999, Gaskins 1999). This implies autonomy and keen observation, along with development of skills in organizing and taking responsibility with initiative—which are not encouraged (and are even constrained) in assembly-line instruction.

SOURCES OF LEARNING: OBSERVATION IN ONGOING ACTIVITY OR RECEIVING LESSONS

In intent participation, learning is based on participation in ongoing or anticipated activities, with keen observation and listening. Learners observe to figure out processes they expect to engage in. They seek understanding far beyond that needed for simple mimicry; their roles in shared endeavors often involve coordinating with others, not simple imitation (Delbos & Jorion 1984). Observation is often, but not necessarily, accompanied by pointers from more experienced companions and conversation embedded in the ongoing activity.

Keen attention was apparent in a footloom factory in Guatemala, where novice adults observed a skilled weaver for a period of weeks, asking no questions and receiving no explanations (Nash 1967). The novice might fetch things for the weaver, but did not begin to weave for weeks, until the novice felt competent and began weaving with skill. Similarly,

Navajos do not teach their children, but they incorporate them in every life task, so that children learn themselves, by keen observation. Mothers do not teach their daughters to weave, but one day a girl may say, 'I am ready. Let me weave.'

(Collier 1988, p. 262)

Research in a number of indigenous communities has noted intense observation by young children (Deyhle & Swisher 1997). Guatemalan Mayan toddlers observed their mothers operating novel objects with an intensity that could be seen in the tension in their fingers as they kept themselves from interrupting the action, in order to gain information by observing (B. Rogoff, unpublished data). Among Tzeltal and Mazahua people in Mexico, young children and even infants can often be seen holding themselves stock-still while intently watching a person or activity, almost without blinking, completely absorbed (Maurer 1977, Paradise 1987).

Parents in some indigenous American communities structure their children's involvement, beginning with simple aspects of an activity once children show interest and providing well-placed suggestions accompanying their mutual involvement in shared endeavors (Modiano 1973, Ruddle & Chesterfield 1978, de Haan 1999). The structuring of activities in increasingly complex steps is done in the context of being able to see the overall activity in which the steps fit.

Similarly, Kaluli (New Guinea) mothers encourage toddlers to watch events and tell them "Do like that," to indicate key aspects of a task (Schieffelin 1991). Young girls intently observe and facilitate their mothers' work, bringing fire tongs or roasting bananas on the fire. Mothers gradually add new tasks, and daughters work responsibly by age 3–5 years (such as making a small fire to cook themselves a little food).

In communities in which children engage regularly with adults in mature activities, they may seldom be involved in specialized child-focused instruction (Morelli et al. 2003; Rogoff 1990, 2003). For example, Guatemalan Mayan 9-year-olds primarily interacted with adults in the context of joint involvement in household or agricultural work. Their interactions seldom involved explicit instruction—out of 1708 observations, native observers only identified 6 occasions as explicitly involving teaching; shared endeavors provided ample opportunities to learn (Rogoff 1981; see also Gaskins 1999).

Inuit children in the Arctic are expected to take initiative to observe and seek solutions (Briggs 1991). Keen observation requires skill in managing attention, as reflected in this account of a middle-class White child's experience in an Inuit community:

One day when my eight-year-old daughter was watching some girls her age play a game in the house where we were staying, she turned to the mother who spoke English and said:

Anna: How do I play this game? Tell me what to do. What are the rules?

Inuk Mother: (gently) Watch them and you'll see how it goes.

Anna: I don't know how to learn by watching, can't you tell me?

Inuk Mother: You'll be able to know by watching.

(Crago 1988, p. 211)

Children who are used to the heavily explanatory, lesson-based approach of schooling may depend more on being told how to do things, even in a situation in which the needed information is available through observation of ongoing events. In the context of a demonstration by an adult, European-heritage and Mexican-heritage children whose mothers had extensive Western schooling often pressed for further information beyond that provided in the demonstration (R. Mejía Arauz, B. Rogoff & R. Paradise, submitted). Indeed, the adult demonstrator reported that it felt like some of the children seemed to try to force her to explain what they were supposed to do (R. Paradise, B. Rogoff & R. Mejía Arauz, in preparation). In contrast, Mexican-heritage children whose mothers had basic schooling more often observed without pressing for more information.

Similarly, Mazahua 9-year-olds showed an ability to notice and infer from their parent's actions what was going to happen or when they needed to dedicate attention. They knew when they could afford to do something else momentarily and when they needed to focus on the parent's activity. "When the parent started a new aspect of the task they would immediately come closer or pay more attention to make sure they would not miss anything" (de Haan 1999, p. 143).

If children are responsible for learning by observing, alertness to multiple ongoing events is crucial. Timesharing of attention allows them to notice nearby events that may be of interest. Guatemalan Mayan 12- to 24-month-olds often skillfully attended to several events simultaneously, with each line of attention maintained without interruption (Rogoff et al. 1993, Chavajay & Rogoff 1999). For example, they often worked an object with their mother and monitored other conversations, maintaining an involvement with the flow of events. Mayan mothers usually attended simultaneously to several events, often articulately communicating with their toddler through gestures, gaze, touch, posture, and timing, while fluently conversing with adults. In contrast, middle-class European-American toddlers and mothers usually attended to one event at a time, either by alternating attention quickly between two events or by focusing only on one. Similar contrasts in the use of simultaneous attention have also been found with U.S. Mexican-heritage and U.S. European-heritage children (M. Correa-Chávez, B. Rogoff & R. Mejía Arauz, in preparation).

Middle-class U.S. parents may scold their children for attending broadly, "Pay attention to what you're doing!" They seem to regard attending broadly as a distraction. However, simultaneous attention to several sources of information is mindful (M. Correa-Chávez, B. Rogoff & R. Mejía Arauz, in preparation). Indeed, Guatemalan Mayan parents expect their children to attend broadly to notice key ongoing events (Chavajay 1993). They urge children to observe ongoing events, and if they give an explanation it is after requesting that the child first attentively observe; if the child does not observe, a parent is likely to scold, "Have you no eyes?" The parents' expectation is that the children take the initiative to observe, not wait for a lesson.

FORMS OF COMMUNICATION

Words are an important aspect of communication in learning by intent participation, accompanying other forms of communication and joint action. However, words have different functions than in assembly-line instruction, where they are used extensively to describe information out of the context of shared endeavors, and known-answer questions are employed to quiz learners.

Participation in lesson formats begins in the first years of life for many children in school-focused communities. For example, middle-class mothers from the United States and Turkey provided toddlers with language lessons by giving running commentary describing events, where their words served no practical function (Rogoff et al. 1993). They asked test questions that requested information they

already knew, as did this British mother, commenting on a picture in a book to her 4-year-old:

And that's a knight. It's a man they called a knight, that used to fight, with a sword. And what's all this he's got on his body? [No answer] He's got armour on.

(Tizard & Hughes 1984, p. 40)

Young Inuit mothers who had attended school were more likely than older Inuit mothers to involve their children in such question-answer routines and labeling of objects, and expected these to be useful in preparing children for school (Crago et al. 1993).

In contrast, communication in intent participation employs words to provide or discuss needed information during (or anticipating) shared endeavors, and questions seek information that is not already known or explore ideas. Adult-child conversation in many communities occurs primarily for the sake of sharing needed information in the context of ongoing activities, rather than serving as lessons to teach children about talk or to provide disconnected bits of knowledge (Ward 1971, Blount 1972, Heath 1983, Ochs & Schieffelin 1984, Crago et al. 1993).

In intent participation, words team with information available from observing ongoing processes, along with articulate nonverbal communication embedded in accomplishing shared endeavors. Explanations are given in the context of the process being learned (Cazden & John 1971, John-Steiner 1984, Kojima 1986). For example, a British 4-year-old commented on something unfamiliar while watching her mother weed, eliciting an explanation:

Child: There's a dead onion.

Mother: No, they're not dead onions, they're bulbs.

Child: Are they dead?

Mother: No, they'll come up again this year. They store all the food from the old leaves, they all rot down. It stores food, and the next year it comes up again.

(Tizard & Hughes 1984, p. 39)

In addition to comments and explanations embedded in ongoing shared activity, narratives and discussion of hypothetical or potential situations may be extremely important as part of the children's learning in the tradition of intent participation (e.g., Heath 1998).

Learning about important activities—including talk—by watching or listening in as a third party is a preferred way to learn in some communities. For example, in an Athabaskan (native Northern Canadian) community,

the ideal learning situation for a child or young person is to be able to hear the stories of elders . . . speaking to each other as narrator and audience with the child in a third, observational role . . . Because the child is not directly

required to respond to the narratives, his own autonomy is respected at a time in his life when it is likely to be highly vulnerable. While this three-party narrative situation may not always obtain, those who are able to learn in this way are regarded as very fortunate.

(Scollon & Scollon 1981, pp. 120–21)

The contrast is not whether or not words are used, but the embeddedness or isolation of the words from the endeavors being referred to. In intent participation, talk is used *in the service* of engaging in the activity, augmenting and guiding experiential and observational learning; in an assembly-line lesson, talk is *substituted* for involvement.

ROLE OF ASSESSMENT

Assessment of learning plays a very different role in the two traditions. The difference is crucial in efforts to transform schools and to evaluate formal and informal educational institutions (Shepard 2000). Educational innovations designed to promote participatory learning practices tend to be thwarted and pushed back toward the factory model as a result of the structure of assessments used for accountability. The participation structure of most assessments used for accountability fits with that of assembly-line instruction; hence, most assessment practices inadvertently (or sometimes intentionally) measure the extent to which people have learned to participate in the assembly-line tradition.

Elwood Cubberley, Dean of Education at Stanford, presented the assembly-line model of assessment in his leading educational administration textbook in 1916:

Every manufacturing establishment that turns out a standard product or series of products of any kind maintains a force of efficiency experts to study methods of procedure and to measure and test the output of its works. . . . [Building pupils demands] continuous measurement of production to see if it is according to specifications [and] the elimination of waste in manufacture.” (p. 338)

In assembly-line instruction, assessment has the purpose of inspecting receipt and retention of transmitted information. It focuses on the products that learners are to produce, or on the learners *as* products. Whether a learner spontaneously engages in the activity in question is seldom assessed—in large part because motivation is managed by other people, making both assessment and development of voluntary involvement difficult.

In contrast, in intent participation, assessment includes children’s interest and voluntary willingness to be involved as important aspects of learning (Metge 1984, de Haan 1996, Nagai 2001, Rogoff et al. 2001). In many communities that emphasize intent participation, adults expect children to watch and begin to take initiative. If they do not develop interest in pitching in spontaneously, this may be evaluated

as problematic. For example, a Mazahua father described his 7-year-old son as lacking interest and the strength to decide for himself to do what needs to be done. The father reported that even when his son sees that he is working and something is missing, his son does not assist without being yelled at. The father criticized, "I am almost forcing him to help me to do it" (de Haan 1999, p. 100). The father contrasted this with the attitude of his 3-year-old son, whom he considered very attentive, reporting that he watches what the parents do and follows suit, perfectly, without needing explanation.

In intent participation, assessment occurs integrally throughout shared endeavors to further learning—not just as an "outcome." The goal is to help children to learn the important skills and ways of their communities. In engaging in a shared endeavor, experienced people, as well as novices themselves, notice the state of understanding and the type of help the novices need. This assessment allows them to determine what to do to support novices' involvement, whether this is in order to advance the novices' learning or to advance the activity itself.

In contrast, assembly-line assessment occurs separately from the learning process, with the purpose of sorting out some people and certifying others for continued application of resources. A goal of many forms of schooling, as bureaucracies, is to select those students who will be allowed to proceed to further opportunities, by ensuring that others fail. Schools, after all, would not be fulfilling their functions of supporting social differentiation and the division of labor if all children were equally successful.

As a tool for sorting, grading on a (normal) curve was introduced by Max Meyer in 1908 in the prestigious journal *Science*, proposing that the top 3% be ranked excellent, next 22% labeled superior, middle 50% judged medium, next 22% inferior, and bottom 3% failing. It caught on a few years later during the era of "scientific efficiency" in which education experts and administrators conscientiously applied industrial models for factory production to schools.

In some settings, the inspection, sorting, accountability, and certification purposes seem to outweigh learning goals, with burgeoning tests monopolizing class time and teachers' instruction. As a Canadian politician pointed out, the push for extensive testing is like telling farmers who are concerned about the growth of their cattle; "weigh the cow, weigh the cow, weigh the cow."

When considering the relative value of different participation structures for organizing learning, it is crucial to consider their varying purposes. In the assembly-line instructional tradition, the learning of some is fostered while the rejection of others as learners is also sought, in line with bureaucratic needs for efficiently sorting individuals and life opportunities. In contrast, in intent participation within families and communities worldwide, the aim may be (although it is not invariably) to support the learning of all members of the community, and learning is organized in ways that allow this aim to be accomplished. Consider the general success and processes of early language learning within families everywhere and of widespread mathematical understanding in Japanese elementary schools, organized in ways fitting the intent participation tradition.

In closing, we return to our point that although people everywhere learn through observation, many communities especially emphasize keen observation in support of participation in ongoing mature activities. We have contrasted two distinct multifaceted traditions for organizing learning, in order to describe and articulate the integrated processes of learning through intent participation. We hope this article encourages heightened recognition and research attention to the process of learning through intent participation, both in communities that use it extensively and in communities where it may currently be overshadowed by other forms of fostering learning.

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