How Do Young Schoolchildren Learn to Learn?

Galina A. Zukerman

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Recent decades have seen a shift in educational priorities away from developing knowledge and skills toward developing abilities. The question of what values to prioritize, particularly the question of which abilities should be developed in children of a given age, is not a question for science. Developmental psychology can tell us what abilities children are capable of developing at a particular age. Pedagogical psychology can instruct us in how to actualize a particular developmental potential: what educational and child-rearing conditions are required for the achievement of potential developmental abilities to become the norm in childhood development. Here, we seek to answer these questions as they apply to the ability to learn—one of the most general goals of modern education.

The ability to learn is a characteristic exhibited by subjects of learning activity—which capable of independently going beyond the limits of their own competence to seek general means of action in new situations.
The ability to learn as a value and goal of the educational process entered mass pedagogical consciousness as an everyday term long before educational theory subjected it to conceptual analysis. School programs simply added the ability to learn to the list of the most classical academic skills: schoolchildren must be able to compute, read, write, and, by the way, learn. This occurred in the late 1970s in the face of one in a series of technological revolutions confronting manufacturers with a new need for lifelong training. Just how was the term “the ability to learn” understood? The answer to this question can be found by examining prevailing ideas about schoolchildren who lack that ability. Here, we rely on the experience of individual psychological counseling of schoolchildren sent to a psychologist with the standard complaint: “He (or she) is not able to learn.” This complaint is usually associated with two sets of symptoms.

1. Difficulty becoming engaged in schoolwork, hours spent sitting over homework, a tendency to become distracted, to quickly forget the problem being solved. In most of these cases, psychological testing determines that the intellectual sphere is normally developed but the ability to organize activity is underdeveloped.

2. Difficulty assimilating new material, poor retention, failure to identify the most essential elements when paraphrasing material, the need for a large number of training exercises. Here too, psychological testing rarely identifies an abnormally low intellectual level. Nevertheless, the child, as a rule, exhibits intellectual passivity and lacks effective strategies for thinking and retaining.

The initial treatment and correction of such an “inability to learn” also takes two forms. Children are taught: (1) self-organization skills, and (2) optimal memorization techniques and thinking strategies.

Teaching self-organization and mental-work skills greatly increases learning effectiveness. But are “educability” (Menchinskaia, 1989) and “the ability to learn” the same thing?
In our view, they differ in terms of one exceptionally important parameter: the means by which knowledge, skills, and abilities are transmitted from teacher to learner. “Easily educable” is a term used for pupils who are easy to teach—ready “objects of education.” “Able to learn” is a term applied to those who are capable of self-teaching, of exercising agency in their own learning—of being the subject or agent of learning activity, an active force in learning activity.

Assertions that a child is (or is becoming) a subject of learning activity are usually postulated rather than proven, since proving the very possibility of such a capacity requires either the assumption of certain innate rudiments of subjectivity (Abraham Maslow’s assumption of the need for self-actualization) or a serious reexamination of the Vygotsky school’s view that interiorization serves as a universal mechanism for generating mental neoformations, including subjecthood.

If for many years learning activity is an intermental activity divided between teachers and learners, at what point do children become subjects, acquire the ability to learn, gain educational independence? (We use the terms “ability to learn” and “educational independence” synonymously.) Does this happen when children first encounter their teacher (or an educational task the teacher assigns)? Or does it occur only upon completion of school, when children (teenagers) have fully interiorized all components of learning activity? Or perhaps this happens when the redistribution of components of learning activity from teacher to learner reaches some sort of “critical mass” and the child is transformed from an “object of education,” someone taught [obuchaemyi], into a “subject of education,” a “learner” [uchashchiisia].

In order to pinpoint the birth of a subject able to learn independently, we examine two possible relations of the concepts “interpsychic action” and “independent action” existing within the Vygotsky school: (1) As long as an action remains intermental and is carried out with the help of an adult, it is not independent; (2) People can independently bring about a collaborative, intermental action that they are unable to carry out individually.
Children’s independence is usually understood as the ability to act without an adult’s help, as the end of the interiorization of an action. Children become independent once they have assimilated certain content and means or methods of action. When this occurs, their intermental interaction with the adult disappears, having served its purpose. This interpretation treats independent action as synonymous with intramental action.

However, the definition of the word “independence” as “freedom from external influence, compulsion, external support and assistance ... the capacity for independent action, judgment, initiative, decisiveness” points to the narrowness of this concept when it is treated merely as the result of mastering an action. The natures of independence, initiative, and decisiveness are clearly not the same as the acquisition of certain cultural media.

Not only semantic but also psychological evidence points to the existence of other sources of independence that do not fit into the idea that children gradually accumulate independence as their abilities grow. Such sources have been identified by psychotherapists examining the various causes of a lack of independence in children in terms of overprotectiveness that undermines the roots of children’s initiative, risk-taking, and spirit of enterprise; a hypertrophied need for supervision in anxious children; and neurotic “spasms” of the motivational component of action (Garbuzov, 1990; Ratter, 1987; Zakharov, 1982). This view of the causes of children’s lack of independence is instructive for psychologists studying developmental norms, if only because psychotherapists deal with the lack of independence among children who have mastered the actions needed for a given situation but lack ... something. What is that something?

Learning theories have attempted to answer this question. Developing the ideas of Kurt Lewin, learning theories study the capacity for nonconformist actions and judgments and freedom from the effects of “field” and “crowd” as a facet of independence. The understanding of independence as being free or independent of the current (always social) situation underscores yet another condition of independence: skill in
navigating the interactional “dynamic forces” of which children’s actions become a part. The very real nature of group effects (Rudestam, 1990) inherent in any intermental situation means that the emergence of children’s independence cannot be reduced to the assimilation of content and means of action. But what are the other sources of children’s independence? What, for example, underlies the qualitative leap forward in the intermental interactions between teacher and learner familiar to anyone who has taught reading, a turning point that takes place long before the actions of reading and writing have been fully interiorized? Some children, long before they know the entire alphabet, begin to take hold of their learning by peppering any literate person with questions: they constantly ask the names of unfamiliar letters and immediately attempt to sound out words with them. This is a sign of children’s independence manifested as a feature of intermental action. Children exhibit initiative in structuring interaction with a teaching adult before they have mastered the action’s content, thereby becoming subjects of an action that has not yet been assimilated and can be carried out only with an adult’s help.

What enables the emergence of a child’s ability to independently structure intermental action? Clearly, this ability is not just the result of mastery of the content, means, or methods of action. Like M.I. Lisina (1986, p. 76) we believe that children’s independence and initiative in structuring interaction with an adult are possible only because they have mastered the form of communication that corresponds to this action. However, whereas Lisina studies communication as an activity whose object is another person, we are referring to communication within an activity whose object is a particular layer of human cultural-historical experience—tools, signs, concepts, and so forth. In this context, instead of communication, it is more appropriate to talk in terms of “collaboration” and “object-focused interaction” between adult and child. In collaborating with an adult, children are independent to the extent that they are able to bring the adult into the interaction on their own initiative.

For these two complementary approaches to children’s independence we have thus identified two sources of children’s
independent action that cannot be equated: (1) mastery of the content, means, and methods of an action, and (2) mastery of the form of collaboration with an adult that corresponds to that action and initiative in organizing interaction. This second facet of independence can be seen in children’s behavior earlier than the first—one on the level of intermental action.

Can a child who still knows and is able to do very little initiate learning interaction and be the subject of intermental learning activity? In terms of existing educational practice in elementary school, the answer is obviously “no”: instances where young schoolchildren take the initiative to involve the teacher in learning actions they themselves play a role in structuring are extremely rare, and the idea that there is a corresponding developmental tendency is out of the question. But we are not inclined to accept the existing educational system as an absolute and allow that educational practice ignores existing developmental “valences” and even sets up “road blocks” against them at education’s very threshold. This is why we are advancing the hypothesis that the potential for learning independence may exist in young schoolchildren as an ability to initiate learning interaction with an adult and teach themselves with the help of an adult. This work’s primary task is to validate this hypothesis.

The specific sort of learning of interest here is as follows: the ability to learn that manifests itself during the early stages of learning as children’s ability to structure a specific learning interaction with an adult and be the subject of this interaction, in other words, to initiate it. To cast the question our study addresses in concrete terms: what are the features of learning interaction and the educational process into which it fits?

In exploring the specific form of educational interaction we start with the assumption that the specific nature of its subject matter corresponds to what has been described in detail in studies carried out under the supervision of D.B. El’konin and V.V. Davydov (Aidarova, 1978; Davydov, 1972; El’konin, 1989; Fridman, 1977; Markova, 1974; Mikulina, 1995; Repkin, 1976, 1988; Zhedek and Repkin, 1974). This work has been carried out in keeping with these studies, which treat learning activity as
children’s search for general means for solving certain classes of problems. Furthermore, the word “general” (means) should be understood in its dual meaning: it refers simultaneously to the foundation common to the human community and the universal logic underlying individual action and thought. In other words, the processes of communication (\textit{obshchenie} or interaction) and generalization (\textit{obobshchenie}) are two aspects of a single process of joint activity (Leont’ev, 1979; Lomov, 1979), and our task is to study how they are connected.

\textbf{Communication and Generalization}

“We have found the key to the problem of developmental education in young schoolchildren. This key is the content of education. If we want education in elementary school to be developmental, we must make sure, first and foremost, that the content is scientific,” El’konin wrote in 1974 while summarizing a fifteen-year study of the developmental capabilities of young schoolchildren (1989, p. 258). This study’s experiments showed that introducing young schoolchildren to the principles of science, allowing them to assimilate systems of theoretical concepts, is (a) possible, and (b) leads to a cardinal restructuring of the entire character of children’s development: it leads to the appearance of theoretical thinking and the reflection that underlies it—a mental neoformation central to the early school years.

The systematic and sign-model nature of theoretical knowledge sets the content of school education apart from the diverse spectrum of cultural content learned by children before they enter school. Qualitatively new content clearly demands qualitatively new forms of assimilation. The initial form by which children assimilate any cultural content is in collaboration with an adult. The relationship between the form and content of this collaboration was aphoristically formulated by L.S. Vygotsky: “A new type of generalization demands a new type of communication” (1982, vol. 4, p. 356). This work is dedicated to deciphering this elegant formulation and giving it concrete form. Our central question is this: What specific characteristics of
child–adult learning collaboration are essential for the assimilation of new theoretical knowledge and the child’s attainment of a new— theoretical— method of generalization?

In order to substantively define learning collaboration, which should first appear in young preschoolers, it must be distinguished from previous preschool, preeducational forms of child–adult collaboration. What forms of interaction with adults are children capable of by the time they arrive at school? Why is the arsenal of preschool means and methods of collaboration insufficient for educational content to be truly assimilated?

Describing the forms of collaboration that normal six- or seven-year-olds are capable of requires a conceptual apparatus that allows for the leading lines of collaboration to be isolated amid the empirical diversity of child–adult explorations. We have used El’konin’s periodization of children’s mental development as a conceptual framework for identifying the most common forms of collaboration. This periodization is based on the idea that there is a predictable shift in the activities that lead children’s development at each age and determine the formation of the main mental neoformations at each developmental stage. Since in its genetic, initial form, any leading activity is not individual and is divided between child and adult, the nature of joint actions, the type of collaboration specific to each leading activity, can be viewed as a leading form of interaction.

The most abstract (meager, lean) way of periodizing leading forms of interaction is taken directly from the chart of psychological ages (Figure 1).

What does this diagram add to the Vygotsky school’s understanding of the periods of children’s mental development? First, it replaces the interactor, rejecting the natural, commonplace words “adult” or “teacher” (the psychological content of the term “teacher” as a participant in educational interaction will be explored below). Second, the wording regarding leading forms of interaction makes explicit an obvious fact that often escapes attention: normally, the forms of collaboration children assimilate do not die off at the end of a given age once they have given rise to a particular mental neoformation. It goes without saying that
each new mental formation will influence the previous developmental stage’s neoformation. However, rather than replacing the previous developmental stage, the new one merges with it. The birth of new forms of collaboration equips children with new techniques for initiating previous forms of communication. For example, the emergence of speech not only promotes the appearance of new spheres of communication but also equips children with new means of involving adults in direct emotional contact.

Once it has appeared, a given form of collaboration lives on for as long as its “host” is alive, with its own territory, motives, problems, subject matter, means, and operations. If it does not live on, if a form of collaboration does not take hold or it dies, this will inevitably lead to a degree of mental impairment. Most harmful is a loss of basic faith in oneself and others—loss or impoverishment in this area comes at the cost of losing the most primeval, immediate-emotional basal connection with others. But any injury to the “living body” of collaboration is no less

<table>
<thead>
<tr>
<th>Period</th>
<th>Description</th>
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<tbody>
<tr>
<td>Infancy</td>
<td>The immediate-emotional communication between the child and a loving adult as a universal source of warmth, care, understanding, benevolence, protection, and the acceptance of the child’s OR: the child’s acceptance of his or her own unique existence as a thing of inherent value</td>
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<tr>
<td>Early childhood</td>
<td>Object-manipulation collaboration between the child and a skilled, active adult as the conveyor of models of concrete, practical action</td>
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<tr>
<td>Preschool childhood</td>
<td>Play collaboration of groups of children with an ideal adult as a conveyor of norms of social relationships</td>
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<tr>
<td>Young school age</td>
<td>Collaborative learning by a group of children with an ideal adult as the conveyor of norms of thinking and activity</td>
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Figure 1. Periodization of leading (and enduring) forms of collaboration between children and an adult.
traumatic. For example, it is said of people who have failed to assimilate object-manipulation collaboration (and progress in this area continues far beyond childhood and youth when professional mastery is being pursued) that they have “two left hands” since they have so much trouble acquiring manual skills. People who never learned or have lost the ability to play suffer from a paucity of imagination. And a failure to form learning collaboration leads to an inability to learn and a lifetime of being unable to improve in the areas of thinking and activity.

The need to keep all classroom lines of communication open between children and adults means that not only content, means, and methods must be considered in organizing learning collaboration, but also the place of preeducational forms of child—adult communication during lessons. In organizing classroom life, a teacher and psychologist should create developmental conditions for children by fostering a new learning collaboration. At the same time, they must create conditions under which preschool achievements can be built on through the incorporation of preschool forms of collaboration into learning rather than setting all hopes on the elements of school life, where everything supposedly falls into place “naturally.” This concern for preschool forms of collaboration are inspired by more than humanism: only by taking into account the communicational experience of new schoolchildren can we characterize education’s starting point, the pupil’s first contact with the teacher.

Clearly the task of fostering a new, educational, form of interaction rests fully on adult shoulders. Upon first encounter with their teacher, children, unaware that some yet unknown relationships with adults lie ahead, behave the only way they know how: like preschoolers. It should, however, be emphasized that during this first encounter, the child is active. First-graders “ready for school” feel an intense need for a relationship with their teachers (L. Bozhovich, 1968; Nezhnova, 1988). But the teacher is seen, of course, not as a conveyor or transmitter of ideal norms of thought and activity, but as a living, breathing adult on whom the success and enjoyment of the school life that lies ahead depends. Upon arriving in the classroom, children therefore
immediately begin to deploy the forms of collaboration they have at their disposal, are able to initiate, and that can be used to involve or invite a new significant adult (and/or build a defense against the forms of communication that, based on past experience, are considered most traumatic and dangerous). Consequently, upon first encounter with their teacher, children are already subjects, but of preschool types of activity rather than learning activity. During the first weeks of school life, the main preschool forms of communication are in plain sight.

The methods for establishing direct emotional relationships with an adult that are most clearly evident in the classroom are “infantile” methods. Sustained intense gazes into the teacher’s eyes, following the teacher with their eyes, a constant striving for physical contact (touching the clothing, clinging, snuggling), motor and vocal animation and a ready smile whenever the teacher appears—all these are easily recognizable components of the well-known “animation complex,” the first form of communication with an adult that children are able to initiate (Lisina, 1986). Teachers cannot begin building a new community with children unless they are able to rely on their trust, openness to any affectionate communication, and uncritical acceptance (whatever the educational program). Teachers must be seen as a universal source of concern, benevolence, and protection within the unfamiliar world of the school. The distance and detachment of teachers who fail to maintain these direct emotional lines of communication or sever them will be repaid with school neuroses (Eberlein, 1981).

The next form of collaboration—object manipulation—is the one most comprehensively presented in school, since the content of elementary school (which does not strictly coincide with the content of learning activity) presumes the assimilation of a host of object-focused actions. Even in early childhood, children begin to learn from adults a variety of operations with tools and signs, but a fundamental feature of these operations is that “the object is marked with neither a social function nor a means of rational use” (D. El’konin, 1978b, p. 6). Children are not capable of discovering the sense and method of using any human tool or
sign without models that they can assimilate only acting jointly with an adult conveyor of these models. The method used for child–adult object manipulation collaboration is imitation, action according to a model (Zaporozhets, 1986). The formula for imitative collaboration is: “Do it with me. And now do it yourself, but exactly the way I did.” One-year-olds are capable of imitating bodily form only when fully immersed in the action being modeled by the adult (Meshcheriakov, 1974); by six or seven, children are able to imitate after a delay, relying on speech, symbols, and images. However, object manipulation actions by first-graders, who are much better imitators, are still relatively global and syncretic in nature.

In describing the long prehistory of sign operation, Vygotsky states that, for preschoolers, “the sign still acts as part of the general syncretic situation” (1984, vol. 6, p. 67). For children entering the classroom for the first time, this is still where matters stand: the ability to act based on a model that has been assimilated through object-manipulation collaboration with an adult does not yet come with an ability to analyze the model itself, to identify its separate properties and discard or leave out anything unnecessary. We have all witnessed comical examples of the virtuoso but still somewhat syncretic reproduction of actions modeled by a teacher during the first lessons in reading, when the teacher deliberately draws out the sounds of words while presenting the class with models for auditory analysis. Children assiduously reproduce not just the drawn-out cadence but also the timber of the teacher’s voice. Teachers with particularly high voices might wind up with a classroom of children issuing high-pitched squeaks.

The dangers posed to young schoolchildren’s development by this tendency toward global reproduction of adults’ model actions deriving from the experience of object-manipulation collaboration will be described below. For now we should point out the benefits derived from the fact that children first entering school have already assimilated an imitative form of collaboration with adults and begin to demonstrate their readiness and ability to imitate any models literally from the start. This is what allows teachers not only to begin communicating with their class in a
spirit of trust and affection but also to pursue the purpose of school: to begin working on educational material and teach skills, including the skills of reading, writing, and arithmetic.

Children’s ability and readiness to deploy playful forms of collaboration during lessons is often viewed negatively—they are accused of “playing rather than working.” But this can be said only when play strays into alien territory and takes the place of substantive collaboration related to the subject matter at hand. When education is just beginning, play itself serves as an assimilated way of modeling human relationships (D. El’konin, 1978a) and helps first-graders quickly assimilate all the complex, ceremonial school communication with adults that might otherwise overwhelm them: the tremendous number of rules governing all aspects of behavior (how to sit or stand; hold the head, arms, notebook; where to look when; what to talk about and how). School, as a huge and (for now) engaging game with confusing but interesting rules, offering the (so far) appealing role of “good pupil”—such is the normal childhood image of being a learner during the period of adaptation. Children will not immediately understand that the rule “two times two is four” and “raise your hand before speaking out in class” belong to two different categories, and only one of them relates to the role of learner.

Without these three areas of collaboration, school life overall and the joint work of teacher and class will not get off to a good start. Relying on young schoolchildren’s preschool experiences of collaboration, on their energetic readiness to collaborate with the teacher, their initiative in building emotional, imitative, and playful relationships with an adult, a pedagogue can immediately create a community that allows both him (or her) and the children to feel at ease and in which learning activity—the leading condition for the development of young schoolchildren—can emerge (or not!). But will planting new educational, theoretical content in the fertile ground of preschool collaboration be enough to foster collaborative child–adult learning activity? In fact, the conceptual content of learning activity can be distorted, garbled, and impoverished if it is comprehended only in preeducational, preschool forms.
Immediate-emotional communication degrades the substance of any tool-sign action. We know that babies who become “stuck” on this form of communication have a hard time learning to walk, talk, and use objects. It is difficult to imagine a pupil who interacts with the teacher exclusively through emotional forms of communication, but occasional manifestations of “school baby” behavior are common. Some children revel in the teacher’s personal attention and feel the only content worthy of attention is the praise and other signs of sympathy shown them; they strive to prolong physical contact with teachers and keep them close by, in so doing eagerly and unpretentiously demonstrating their helplessness, using signs of affection, tears, and other emotional means to attain extra protectiveness and intellectual “spoon feeding.” If the teacher does not let such children monopolize their attention, these “school babies” mentally remove themselves from the learning situation and either stop working and soon fall behind or switch to demonstrative, affective means of attracting the teacher’s attention and become “disorderly.”

Play collaboration degrades the effectiveness of object-focused action, since the goal of play lies in the process of play itself. Schoolchildren who deploy nothing but play collaboration typically either “withdraw from activity” (a term used by A. Venger, 1989), transfer play to the realm of imagination and “disconnect” from the reality of the lesson, or overtly turn everything that enters their head, comes to hand, or catches their eye into a game. If a playful boy thinks of an apple, he immediately begins to eat it in the middle of a lesson; if he hears something about a beetle, he buzzes and crawls under the desk. He feels compelled to “fly away” from the teacher, at which point he either moves the game into the realm of imagination, withdraws from the activity, stops listening, and becomes a poor learner, or, having lost faith and interest in the teacher, who has failed to join in the game, stops listening and becomes “disorderly.”

Children who always resort to object-manipulation interaction, who strive to reproduce what the teacher is modeling as precisely as possible, are not at risk of entering the ranks of the disorderly.
They also will not totally fail as learners: they will assimilate the curriculum’s content involving easily reproducible tasks. Where they do run into trouble is in deciding what to do when there is no model to copy. Confronted with a learning task oriented toward getting a result (Davydov, 1972; 1986) or aimed at seeking general methods of action, such pupils will be inclined to turn the problem into a concrete, practical one. Abilities and skills take shape, but they can only be applied in typical, familiar situations. Assimilated concepts will be verbalized, but lack reflection: such children have a vague sense of the limits of a task’s application and the boundaries of their own knowledge. They have trouble distinguishing what is known from what is unknown and will constantly confuse things that they have studied and things that they have learned [uchili versus vyuchili]. In other words, they will not have fully assimilated the young schoolchild’s central learning activity neoformation: the capacity for reflection. Their thinking remains rational and classifying. As a result, a reliance on object-manipulation collaboration alone results in a lack of the ability to reflect the content of assimilated knowledge and children’s handling of concepts becomes formal in character.

The dramatic consequences of introducing the content of learning activity in preschool form are described in order to underscore what is most important: When teachers invite children to take part in joint learning activity, children respond in the only way they know: a preschool way. But when this happens, the conceptual content being offered is inevitably degraded and the learning task turns into something else. Introducing conceptual content is impossible unless a special educational form of child–adult collaboration is created in relation to that content. Here Vygotsky’s idea bears repeating: a new type of generalization demands new—learning—forms of communication.

For a pedagogue or psychologist concerned with creating conditions for young schoolchildren to develop reflection, there are at least two reasons that developmental learning is impossible without specially organized learning collaboration. The first we have already identified: theoretical concepts that represent the content of leading learning activity for young schoolchildren
cannot be assimilated in preschool forms of child–teacher collaboration. But there is another reason, this one associated with the development of personality. From this perspective, new educational relationships with the adult world and culture must appear so that, building on the achievements of previous ages, limitations of these achievements can be overcome, and the development of their weak aspects can be prevented: so that children’s infantile gullibility can be prevented from growing into a lack of criticalness as a property of thinking and personality; so that tendencies toward imitation can be prevented from degenerating into executive reproductiveness, a rejection of independence, and an inclination toward acting based on readymade instructions; so that children can start to assimilate a learning position (their place and purpose in real rather than play relationship with the teacher) before they grow weary of the role of “good pupil” and are drawn into other games.

Just what is learning collaboration? It can be understood in two ways. It can be seen as a sort of scaffolding temporarily needed for mental development—until children acquire the ability to apply scientific concepts independently, to frame and solve problems demanding theoretical thinking without the help of a teacher. However, learning collaboration can also be interpreted not as an ancillary developmental tool, not as an external, removable support created in the course of building the mental edifice, but as an important part of this edifice, as a valuable ability essential to humans at any point in their adult life. It is this understanding of collaboration that runs through the subtext of the entire previous discussion of preschool forms of collaboration that lead during particular developmental periods but do not die off during subsequent periods of maturation. This idea, in essence, fleshes out A.V. Zaporozhets’s proposition that “the mental neoformations that emerge during early developmental stages have enduring, absolute significance for the overall development of individuals and make their own inimitable contribution to the formation of human personality” (Zaporozhets, 1986, vol. 1, p. 257). Underlying this view of joint forms of action as a mental
(intermental) neoformation of value in and of itself is the axiomatic assumption that every type of communication (or interaction) has value beyond being an optimal way to acquire a particular layer of cultural experience.

Allowing that forms of collaboration have a certain autonomy and are valuable to mental life in and of themselves makes it possible to eliminate a certain voluntarism in solving the problem of each age’s mental neoformations. An example of such voluntarism could be the choice (designation) of the ability to imagine and think symbolically as central role-playing neoformations. And what about the ability to decentrate that is formed in play, to coordinate intentions and actions? Should it be considered less important? On what basis? There is even more confusion over neoformations of early school age. Determining reflection (an ability to know what one knows and does not know), theoretical analysis, and mental planning are recognized as central neoformations of learning activity (Davydov, 1990). Why not the ability to learn, which is obviously not the same as reflection, analysis, and planning, but undoubtedly forms in learning activity and is a fundamental human ability? For now, we see only one way out of these difficulties: introduce the assumption that the form of collaboration as a factor in mental development is relatively independent and identify two types of neoformations—those associated with assimilating new subject matter, new layers of culture, and those associated with assimilating the very form of collaboration. The functioning of neoformations of the first type ensures the success of a person’s individual activity. Neoformations of the second type allow people to establish particular relations with others and with themselves. In Table 1 we diagram this means of classifying mental neoformations. The emphasis was not on using every term precisely and unambiguously, since we are engaged in substantively defining only one concept: “learning collaboration.” Having genetically defined learning collaboration as an intermental form in which an ability to learn exists, we have paved the way toward further concretization of this concept by characterizing its developed form.
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<th>Characteristics of leading activity</th>
<th>Immediate-emotional communication</th>
<th>Object manipulation activity</th>
<th>Play activity</th>
<th>Learning activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Content</td>
<td>Person as a source of love, understanding, acceptance</td>
<td>Methods for using human tools and signs</td>
<td>The social norms and meanings of human relations</td>
<td>General methods of problem solving</td>
</tr>
<tr>
<td>2. Interaction method</td>
<td>Symbiotic connection</td>
<td>Literal imitation, acting according to a model</td>
<td>Conditional imaginative symbolic imitation</td>
<td>Common search with partners for a method of action in the absence of a model</td>
</tr>
<tr>
<td>3. How partner is invited to collaborate</td>
<td>Expression of benevolence (mostly verbal)</td>
<td>“Show me how to do it! Is it right? Okay? It’s not working …” request for a model, monitoring and evaluation</td>
<td>“Let’s pretend that … You’ll be … I’ll be” Alternating play and interplay communication on the means of interaction</td>
<td>“I can solve this problem if …”—hypothesis of missing information</td>
</tr>
<tr>
<td>4. What children expect from the adult partner</td>
<td>Presence, empathy, support, benevolent attention, acceptance</td>
<td>Demonstration of models, step-by-step help, monitoring and evaluation</td>
<td>Design of the overall idea and the freedom to improvise within the framework of agreed-upon guidelines</td>
<td>Help verifying child’s hypothesis, help identifying its flaws</td>
</tr>
<tr>
<td>5. Neoformations emerging once the content of leading activity has been assimilated</td>
<td>Foundational faith and hope, basic trust in people, in themselves, and in the world</td>
<td>Speech; object-focused actions</td>
<td>Imagination, symbolic function</td>
<td>Reflection</td>
</tr>
<tr>
<td>6. Neoformations emerging once the form of leading activity has been assimilated</td>
<td>Need for other human beings, ability to trust people, openness to novelty</td>
<td>Ability to imitate</td>
<td>Ability to engage in coordinated action bearing in mind the partner’s play role</td>
<td>Ability to learn (learning skills)</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
</tr>
<tr>
<td>7. What is observed once neoformations are fully formed</td>
<td>Trust in self and others, resistance to emotional stress, empathy</td>
<td>Ability to learn from models and instructions</td>
<td>Capacity for mental action and creation; social skills for collaborating with adults and peers</td>
<td>Awareness of the limits of one’s own capabilities and the ability to go beyond these limits: to independently frame and solve problems, self-modification</td>
</tr>
<tr>
<td>8. What is observed when developmental neoformations are not fully formed</td>
<td>Inability to love and trust, lack of faith in one’s own abilities</td>
<td>Helplessness using tools, difficulty acquiring skills, disorganization</td>
<td>Poverty of imagination; difficulty upon encountering nonstandard situations, social egocentrism</td>
<td>Inability to learn; overly rational thinking</td>
</tr>
<tr>
<td>9. What is observed when developmental neoformations are hypertrophic</td>
<td>Dependence on emotional support and the evaluation of others, a need for overprotectiveness, loss of the object of collaboration, retreat into interpersonal communication</td>
<td>Need for instructions, lack of personal opinion, inability to critique, difficulty analyzing models, a need to be told exactly what to do, difficulty analyzing models</td>
<td>Retreat into fantasy, poor sense of reality, loss of result-orientation, willfulness in goal setting</td>
<td>Disdain for action’s executive component once a general method is found to carry it out, cognitive bias</td>
</tr>
<tr>
<td>10. Age’s contribution to learning activity</td>
<td>Trust in the teacher, need to establish a relationship with him/her, faith in own abilities, openness to new experiences</td>
<td>Ability to imitate teacher’s models of action and inclination to do so and to follow instructions and rules</td>
<td>Assimilation of the role of pupil and life rules of a “true schoolchild,” readiness for educational discussion</td>
<td>Juvenile ability to learn independently</td>
</tr>
</tbody>
</table>
The Educational Independence of Young Schoolchildren

Having defined learning collaboration and the ability to learn (educational independence) as the intermental beginning and intramental “happy end” of one and the same ability, let us try to respond to the question: what is the ability to learn, to independently multiply one’s own knowledge and abilities, to improve one’s abilities?

What Are Those Able To Learn Able To Do?

When we talk about people who are able to learn we often envision a bookworm full of intellectual fervor. However, the ability to learn manifests itself not only in the cognitive sphere and is not the same as an ability to use reference literature and extract sought-after information from books. People possessing the ability to learn have, in essence, the following: precise and concrete knowledge of their own capabilities and, consequently, their limits—they know what they do not know and cannot do. Furthermore, knowledge of one’s own ignorance includes: (a) awareness of the limits of the known, the understood, the accessible, and the assimilated, and (b) some sense (a hypothesis, a belief) concerning what lies beyond the limits of the known. Because of this negative/positive knowledge of their own ignorance (“I know exactly what it is I don’t know”), people able to learn are not confounded by problems for which they lack ready solutions, do not need to be taught, and do not pronounce such problems stupid or boring. Furthermore, people able to learn are also able to seek out problems that they are unable to solve. But it should be emphasized: these are not just intellectual problems. The ability to learn applies to all areas of social consciousness: science, art, morality, law, and beyond.

The ability-to-learn phenomenon has at least two main components: (1) reflective actions and operations necessary for identifying a new problem that the able learner lacks the knowledge and ability to solve and for answering the first question of self-education—what needs to be learned? and (2) the productive actions and operations needed to acquire the lacking
abilities, knowledge, and capacities in order to answer the second question of self-education—how should this be learned? Among all the “repositories” of material and spiritual experience that can serve as a source for expanding individual experience for those able to learn, the figure of the teacher stands out.

The special sociocultural position of an adult we call “teacher” is reserved for someone who teaches learning, that is, introduces children to learning activity and teases out the pure culture of orientation from the fabric of practical action (Davydov, 1986). Adults can impart many skills to children besides learning. In any joint activity, children encounter a skillful adult, someone with well-developed abilities. The difference between a skillful adult and a teacher is that a skillful adult immerses children in a joint action and teaches by example, whereas a teacher breaks down the flow of practical action and extracts its stopping points in order to isolate the phase of pure education: that preliminary orientation toward what needs to be done, why it needs to be done, and how it needs to be done. More than teaching action, teachers teach how to plan, how to think through future actions and find the means of performing them. Collaboration with skilled adults gives children those adults’ skills; at the end of such joint effort adult and child (ideally) will have equal abilities. Such an attainment of equality is not presumed when child and teacher meet. Teachers are capable of teaching anyone to learn, of making any learner the subject of learning activity. Teachers are satisfied that they have done a good job when learners are able to learn on their own—not the ability to learn, but any other ability. Skilled adults shape skilled children; teachers shape learners—not fellow teachers.

The sociocultural position of teacher is needed when learning has to be separated from doing, when it is not just a matter of “infecting” someone with an ability (the way that toddlers learn to talk, dress, and play). Teachers are also needed by learners so that, on the boundary between learning and doing, between orientation and execution, learners can be held back in a state of orientation and not allowed to pursue a result without paying attention to the way that result is being attained. Teachers have only one demand:
for children to clarify in their own minds whether or not they have assimilated the means of action or need to continue their learning. In other words, the focus of joint learner–teacher action is the boundary of the learner’s competence and the means for crossing that boundary. Learning to go beyond the boundary of one’s own capabilities, beyond the boundary of a particular situation—that is the meaning of being “able to learn.”

A precise image of this ability was captured in a classical experiment by L.V. Bertsfai (1966). Children were asked to move a toy figure through a labyrinth using buttons on a control panel. Some children performed this task by randomly pushing buttons. These children were focused on the result (getting the figure out of the labyrinth), and they had some success, but they never tried to learn or mastered acting within the given system of coordinates and they never tried to identify the overall means of action in such situations. As soon as the control system was adjusted so that, for example, the button to the right now made the figure move up, the children’s rate of success dropped precipitously, causing them to again begin a cycle of trial and error. But some children took a different approach. After pushing the buttons a few times, they asked an adult to remove the labyrinth so that they could first learn how to operate the panel before the figure was put in. For these children, the learning phase—preliminary orientation, the hunt for a means of action—became autonomous and was separated from solving the practical task. For their actions to be successful, they delayed action so that they could first learn: (1) by determining what they would need to act correctly (knowledge of how the control panel worked), and (2) by going beyond the limits of the specific, practical task at hand (removal of the labyrinth) and focusing instead on solving a learning problem, on seeking a general means of action in all analogous situations. These children exhibited both components of the ability to learn.

For anyone possessing the ability to learn, any new task looks like a problem with missing terms. “I know this, but I don’t know that. If I find this out, I’ll be able to solve the problem”—this is generally how the question “what needs to be learned?” is formulated. The second question in self-education—“How can I
learn this?”—has three answers, three means of going beyond the boundaries of a problem with missing information: (1) the missing means of action can be independently invented—in other words, the learning task can be transformed into a creative task; (2) it can be independently found in any “repository,” usually in a textbook, reference book, or some other publication; and (3) a teacher can be asked for the missing information. (Again, teachers, unlike skilled adults, do not give learners anything in ready form; they merely help to organize the search for unknowns.) Each of these three means of self-education (understood as completing the definition of a problem with certain missing terms) presumes an extensive mode of operation that people with a developed ability to learn have already assimilated.

Creatively solving new problems by inventing new means of action, alas, is not part of our education, so we cannot, for now, examine this source of the ability to learn. The works of B.D. El’konin (1981) and A.M. Matiushkin (1991) pave the way toward making the solving of creative problems a pedagogical resource for organizing children’s search for new means of action.

The ability to work with books and other sources of information can be formed quite early, but not during the first steps in education: children must first at least learn to read. Here, we will not address children’s ability to learn through books, referring those interested in this topic to the excellent analysis of this skill by G.G. Granik, S.M. Bondarenko, and L.A. Kontsevaia (1981).

The primary question being addressed by our study is this: how should children able to ask the teacher for specific missing information be taught? Such queries represent the formulation of a hypothesis that the child is unable to test with an experiment—either an actual or thought experiment; the teacher is approached as someone capable of organizing the necessary experiment. A query implying hypothesized missing information is fundamentally different from children’s complaints about their own ignorance or lack of ability. Such complaints are an incapable
child’s invitation to a capable adult to collaborate: “I don’t know what to do. Show me.” Specific queries imply the formulation of a problem that has not yet been fully defined and an invitation to collaborate in finding missing information: “I can act if I find out (with your help) how (why, what happens if . . . ).”

What is a child who engages in self instruction with a teacher’s help? Such a child is a subject of learning activity. But as pointed out above, children do not enter school in this state. They enter the classroom not as initiators of learning able to approach the teacher for missing information, but as trusting, malleable objects of education who obediently follow teachers like little ducklings—a classic portrait of first-graders. But can the object of the teacher’s care and concern transform into the subject of joint learning actions? How is this magical transformation achieved? If we are guided solely by Confucius’s advice “to speak only if the pupil does not know how to ask the question,” the modern lesson would turn into a cross between a lecture and an amateur-hour parody.

**The Child: Object of Subject of Learning Activity?**

There are two ways to frame the question of the object and subject of education, and the answers to each are mutually exclusive. “Can a chicken hatch out of a chicken egg?”—represents how the relationship between the object and subject of education might appear to anyone who reduces education to the assimilation of determined content and ways to use it. (Note the impersonal construction “determined content” and try to figure out who determines it.) At first babies are unable to feed themselves with a spoon, but their mothers provide a model and guide their hands so that gradually they learn to use the spoon independently, without help. From this perspective, child–adult intermental interaction is like pouring content from a full glass into an empty one. If the pouring is done carefully (for example, in accordance with all provisions of the theory of the step-by-step formation of mental actions (Gal’perin, 1977), then the empty glass will be successfully filled without breakage or spillage. The child will
assimilate the content and the child–adult intermental interaction, having served its purpose, will die off, transformed into the child’s independent action. As their abilities grow, inept objects of education become subjects of education and manage without outside help. A chicken will inevitably hatch out of a chicken egg if the mother brood hen provides plenty of warmth.

“But can an egg brooded by a chicken hatch a baby crocodile?”—these are the terms in which someone who does not reduce the process of interiorization to the assimilation of content might think about the relationship between a subject and object. The assumption introduced above that the form of collaboration itself is relatively independent as a factor in mental development means that we can understand the process of interiorization not just as the gradual flow of cultural content from the adult to the child but also as a qualitative turning point for children in their attitudes toward the adult educating them, toward the object of their joint action, and toward themselves and their involvement in learning (involvement, it should be noted, brought about by the adult). A qualitative turning point in intermental relationships comes when children start to take initiative in building relationships with the adult. Children’s ability to independently, on their own initiative, launch some kind of communication with an adult, to involve the adult in communication, is the criterion indicating that a form of collaboration has been assimilated. It should be recalled that children take the initiative in organizing collaboration long before they assimilate its content. For example, independence is formed less by children’s object-focused actions than by the organization of situations of interaction that cultivate children’s initiative.

Children become subjects of education and initiators of immediate-emotional, object-manipulation, and play collaboration long before they attend school. The nature of children’s initiative in preschool forms of collaboration has been described in detail. Babies’ smiles, joyous exclamations, and motor animation whenever the adult appears—these are children’s first self-initiated actions drawing the adult into immediate-emotional communication. The arsenal at children’s disposal for
drawing adults into object-manipulation collaboration is huge: gesturing toward a toy or toward a shoe that has come undone; direct requests for help and the eternal “how?” (to open a box, name an object); questions like “What is this?”; “What to do with this?” and the open credo of imitative collaboration: “I also (just like you) want to do the laundry (or sweep, or dig).” And the possible ways to initiate play are truly endless: the famous “Let’s play” “Let’s pretend that . . .” are among the most frequent phrases preschoolers use to address an appealing adult.

Despite the many instances and varieties of subjectivity and initiative in preschoolers, we have no right to expect children to automatically take on the role of subject of learning activity as soon as they enter the classroom simply because they have been the subject of other sorts of activities. In connecting subjecthood and the assimilation of a form of collaboration, we pointed to its specialization in regard to different types of activity. The fact that children have experience exercising initiative in preschool does not mean that they will exhibit learning initiative. Furthermore, preschool experience exercising initiative not only helps the assimilation of educational content but also hinders it, variously reducing and distorting it. If this experience did not exist in the first place, if children entered into collaboration with a teacher as a “clean slate,” writing theoretical knowledge onto this slate would be much easier. But the fact is that children are not neutral in collaboration: they layer their past method of “taking” onto any subsequent content they “take” from an adult. This brings about a phenomenon described by Jean Piaget in his early work, *The Moral Judgment of the Child*: “Both morality and logic arise at the intersection of the spontaneous actions of giving and taking . . . The logical and moral prescripts with which . . . adults supply young and egocentric minds are readily accepted, but are immediately simplified and distorted” (Fleivel, 1967, p. 288 [retranslated from the Russian]). Piaget identifies two factors in children’s egocentrism: thought patterns and the pattern of cooperation that underlies them. This means that not only particular ways of viewing the world and assigned thought patterns can “distort” the assimilation of cultural content but also
children’s particular experience constructing collaboration with an adult, the experience of adopting or “taking” the cultural models that the adult transmits, can be “distorting” factors.

However, if preschool experience exercising initiative is not appropriate to the assimilation of the new conceptual content of learning activity, how exactly can we characterize the specifically educational initiative that will be used to judge whether or not schoolchildren—still rather inept and possessing little knowledge, but already able to learn from an adult, rather than simply allowing the adult to teach them—have become subjects of learning activity? In order to get at the root of the problem of learning independence, we decided to reexamine and experimentally verify the main postulate of collaboration that underlies our understanding of the fact that during early school age, learning independence begins when a pupil is able to take the initiative in interactions with the teacher, to teach themselves with the teacher’s help. The ability of children who have barely undergone any education to become the subject of their education, the initiator of the learning relationship with the teacher, has been abstractly deduced. But does this virtual ability correspond to real tendencies in childhood development or does it merely represent our professional superstitions (akin to the logically irrefutable argument of the “invisible cat”).

Does the Young Schoolchild Possess Initiative?

The idea that learning independence can be reduced to a long list of complex abilities, both practical and intellectual, is not just permitted—it is widely believed. If “the ability to learn consists of various sorts of cognitive actions” (Talyzina, 1988, p. 57) and amounts to their assimilation, then we need not concern ourselves with either assimilation of the form of learning collaboration or children’s initiative in building learning relationships with adults. It is sufficient to give the adult all the initiative in designing and launching interaction, in providing children gradually diminishing doses of assistance. Children immersed in joint action with the teacher will eventually become independent, will learn to learn on their own, without any help. If this is the opinion held by the
leading authorities in educational psychology, it should be carefully verified whether or not children truly possess the inclination toward initiative in collaboration that we consider the cornerstone of the ability to learn.

This theory was transformed into empirical fact with the help of experiments involving problems with terms that were only partially defined. As discussed above, problems with missing terms are prototypical problems requiring an ability to learn, since seeking and finding the missing terms are two components of the ability to learn. Our problems were designed so that finding the missing terms confronted children with as few technical problems as possible: the operations involved in the experimental problems were clearly within the range of capabilities of the vast majority of study subjects. However, the rules governing how to approach this material (the terms of the problem formulated by an adult) were not spelled out completely—some aspects were not fully explained and required further definition.

The experiment’s overall design was as follows: an adult asked children to classify material into two categories, (A) and (B). The material, however, actually included two other classes (both A and B) and (neither A nor B), and children were given no instructions on how to handle these categories. The first group of problems was built around purely preschool-level, perceptual material. Children were given thirteen pictures showing, for example a green leaf (A), a red shirt (B), a checkered red and green tablecloth (both A and B), or a blue cup (neither A nor B) and told to divide “everything red” and “everything green” into two piles. The second group of tasks involved performing actions that had been carefully practiced during Russian-language lessons. Here, children were asked to work as letter carriers and place letters into the mailboxes of two girls: LENA and LARA. But there was a trick involved in how the envelopes were addressed (see Figure 2).

The experiments were conducted at the very start of the academic year and were performed on first-graders from Moscow’s School no. 91: twenty-seven six-year-olds and sixty-four seven-year-olds. Experimenters maintained a neutral,
benevolent demeanor. They tried not to interfere in children’s actions, did not provide hints or express their attitudes toward how the children were performing their tasks. They did not react to children’s inquisitive looks or attempts to elicit approval (“This one goes in the red pile, right?”), making only evasive comments: “After all, you know the colors well. Think for yourself.” Only in cases where the logical inconsistencies of the situation were pointed out—“Where should I put this picture? It’s not red and not green”—did they provide a substantive answer: “If a picture is neither red nor green, can you put it in the red pile? In the green pile? Now, where can you put it?” A record was kept of every aspect of children’s behavior (eye movements, sighs, fidgeting, pauses, etc.), as well as their results: the pile into which each picture was placed and all questions asked. Three ways of defining the terms of the problem the adult had given them were identified (Table 2):

1. Children boldly made independent decisions where the instructions provided by the adult did not make sense but the logic of the problem dictated a particular course of action. For example, having quickly divided the red and green pictures, children briefly contemplated the picture with the blue cup and placed it to the side, saying, “This doesn’t go anywhere.”
2. Children quickly followed the adults’ instruction as far as they applied, but when they encountered a situation to which the instructions did not apply, they preferred not to deviate from

Figure 2. Experimental materials.

| Category (A) | E |
| Category (B) | R |
| Category (both A and B) | A |
| Category (neither A nor B) | O |
them and continued to follow them, no matter how absurd the results. Such children tended to spend a long time contemplating the picture of the blue cup (the length of this pause, accompanied by agitated movements and frequent glances at the adult, attests to the fact that these children were fully able to detect color and exercise logic), but preferred to ignore the obvious and place the picture in one of the piles indicated by the adult, stating, “it’s a big green,” or “it’s a little red.”

3. Children attempted to reconcile the conflict between the problem’s logic and the instructions by directly asking the adult to clarify the task. For example, holding the card with the blue cup in their hands, they would approach the experimenter with the question: “This isn’t either. Should we put it in a new pile?”

The last line of Table 2 offers eloquent evidence that our assumption about children’s initiative is not just allowing for an “invisible cat”: more than half of children were inclined to complete the problem’s definition, reconciling their plan for solving it with the plan of the adult who assigned them the problem.

<table>
<thead>
<tr>
<th>Means of action</th>
<th>Task</th>
<th>Preschool</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Six-year-olds</td>
<td>Seven-year-olds</td>
<td>Six-year-olds</td>
</tr>
<tr>
<td>Used own judgment</td>
<td>7&lt;sup&gt;a&lt;/sup&gt;</td>
<td>22&lt;sup&gt;b&lt;/sup&gt;</td>
<td>37&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Followed instructions</td>
<td>41&lt;sup&gt;a&lt;/sup&gt;</td>
<td>20&lt;sup&gt;b&lt;/sup&gt;</td>
<td>11&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Consulted adult</td>
<td>52</td>
<td>58</td>
<td>52</td>
</tr>
</tbody>
</table>

Note: Within each line, numbers with different letter indexes differ in terms of a $\chi^2$ criterion with a probability of at least 95 percent.
As mentioned above, the adult did not respond to just any request for help: ignoring inquisitive looks and other demonstrations of helplessness, the experimenter only responded to children who pointed to contradictions that could not be resolved without consultation. And the adult did not assist these children by feeding them answers but by sanctioning independence, permitting them to trust their eyes and reason, since the correct solution to the problem was implicit in their questions. Having received permission to act independently, these children did not seek further guidance from the adult. Obviously it was specifically confirmation that in this situation they could and should “think for themselves” that they were seeking when they approached the adult for help.

But what explains the behavior of children who did not approach the adult for permission to act independently? Probably the differing strategies for dealing with a situation that has not been fully defined stem from different ways of interpreting adults’ unclearly defined demands and expectations. Evidently, children acting based on their own judgment saw the adult assigning the problem as someone who expected independent thought and action. One would certainly expect such interpretations of adults’ expectations to be more common in the situation of a “school” assignment as compared to a preschool one: specifically in the person of a teacher, children most often and consistently encounter an adult expecting them to act using the logic of the problem (our study subjects attended a school where authoritarian teaching had been overcome and a polemical spirit had been cultivated). Developmental differences among children that essentially distinguish them in terms of their personal level of readiness for school—primarily readiness for new relationships with adults—are very strongly expressed here. Seven-year-olds, who have already been living in this new social developmental situation, essentially interpret the adults’ expectations the same whatever the nature of the problem being presented. Six-year-olds, who straddle two ages, respond to “school” problems as a call for independence and to “preschool” problems quite differently.

We should recall that the ability to distinguish colors is developed in early childhood in the form of object-manipulation
collaboration, where the adult provides models that the child learns to imitate, seeing the adult as someone who knows best of all what to do and how to do it. The fact that six-year-olds tend to see adults posing “preschool” problems as conveyors of perfected models explains the spike in the number of children who strictly adhere to the adult’s instructions among that group. Six-year-olds exhibited the ability to apply logic when solving a “school” problem. They interpreted a preschool situation not as a thinking task but as an obedience task.

This attempt to describe children’s consciousness might seem to be overreaching until we demonstrate the premise underlying our method: that the logical operations needed to perform the experimental tasks were accessible to the study subjects. To test whether or not the logical operation of sorting into the categories (both A and B) and (neither A nor B) was accessible to the children, we conducted a second series of experiments with the twenty-four children who strictly adhered to the adult’s instructions (even though they were illogical) during the first series. Our assumption was that they acted as they did because they were being tested for something else (obedience)—but perhaps they simply had trouble with the task of classifying colors?

The experimental material used in the second series consisted of: (a) all thirteen pictures from the “preschool” problem of the first series; and (b) a sheet of paper on which were drawn green and red intersecting circles. Where the two circles overlapped, the shading of each circle was intermingled. Children were given the following instructions: “Do you remember how we divided these pictures in two: red and green? Now we will do that again, but first look at these circles. Which pictures would you put into the center of the green circle? Into the center of the red one? And where the two circles overlap?"

Results

All our study subjects identified the (both A and B) category that was implied by the instructions accurately. Only four of the twenty-four children who strictly adhered to the instructions during the first series continued to do so during the second. The
other twenty properly identified the (neither A nor B) category not covered by the instructions. It still cannot be said with certainty whether or not the four children who did not identify this class had trouble because they lacked mastery of certain logical operations or were too literal in their interpretation of the adult’s expectations. It can be said with relative certainty that the remaining children (83 percent) acted as they did during the first series, when they adhered strictly to the instructions, because they believed their task was to build a relationship with the infallible adult based on literal, unthinking execution—not due to a lack of ability.

Children do not enter into a new interactional situation as tabulae rasae; they have extensive experience exercising initiative and independence in organizing cooperation. In situations where an adult invites them to solve a problem, children will always define and approach the problem in different ways (Venger and Polivanova, 1988). Some assume that adults expect independent thought; others assume they expect obedience and alacrity. This can have important methodological implications.

When placing children into an intermental situation, experimenters have no right to reduce the solving of the problem to the relationship between the child and the problem (although almost all educational psychology uses this abstraction). By placing the adult posing the problem outside the study of how children deal with it, we inevitably lose sight of the intermental nature of their actions and fall into the trap of our own experimental design. On one hand, we cannot describe the reality of the INTERmental itself and therefore construct a theory-of-interiorization task that lacks a foundation. On the other hand, when we begin to criticize a “one-way mirror” experimental design, where the “psychologist can see the subject, but the subject cannot see the psychologist” (Kurganov, 1989, p. 104), we are tilting at windmills. Unfortunately, it is often the psychologist who fails to realize that children see in a problem assigned by an adult an invitation to a very particular sort of collaboration. And if the adult does not define how the
collaboration is supposed to unfold, children will do it themselves.

Children are never truly alone with a problem (even if the experimenter leaves the room) since they at least interact with a real adult before and after the experiment. Furthermore, the problems children are assigned, given a system of relationships with the adult that is not clearly defined, raise two questions: (1) What actions do the terms of the problem require? and (2) What sort of interaction does the adult assigning the problem expect? The possibilities include play interaction that presumes the exercise of free will guided by concrete practical conventions, a model, and instructions; learning interaction demanding that new means of action be sought; or communicative interaction, where the interaction itself takes precedence over the problem’s content. It is impossible to study the phenomenon of INTERmental action unless we take into account the dual nature of experimental situations in which an adult is assigning a problem to a child.

In situations where the system of relationships has not been fully defined by the adult, first-graders discover the ability and inclination to exercise initiative in collaboration with an adult. The type of childhood initiative that was discovered using our method cannot, strictly speaking, be called learning initiative because our experimental problems were not learning problems. Learning problems must feature two conditions missing from our experiment: (a) the search for means of action that are new to the child; and (b) the application of a system of concepts whose totality of connections is known only to the teacher and is not fully imparted to learners, who assimilate only part of the conceptual system. Questions children have for teachers that are truly learning questions are those that address confusion arising in the area between known and unknown concepts. We regard the questions our study subjects formulated to address the contradictions inherent in the situation in which they were placed as prototypical learning questions. Learning questions about possible new actions—the very questions our study subjects asked: is it permissible to apply means of action that they already know but that have not been sanctioned by the adult—are
questions that cannot be answered with adult help. But in formulating such questions, children discover an ability for independent, self-initiated attainment of this help, the ability to be the subject of joint action. Any school that does not foster this tendency toward learning initiative, does not encourage children’s independence in the area of burgeoning knowledge, burgeoning ability, risks destroying this subject of learning activity before it is fully developed.

The sort of learning initiative whose prerequisites we identified in our experiments clashes with the existing educational system, in which learners respond to teachers’ questions, but there is no room for learners who ask teachers questions that provoke joint learning. Everyone is familiar with the typical conclusion of a lesson: the teacher asks, “Today we learned about X. What questions do you have?” and the pupils reply: “We understand it all.” Such behavior would be alarming to a psychiatrist, who would see this lack of questions as a symptom of mental retardation (Garbuzov, 1990). Psychologists associate a lack of questions from children with the features of communication between mentally healthy children and an adult inclined to be too intellectually controlling: children get out of the habit of asking when information is provided by the adult before they ask for it. Our schools, which cram children full of answers to questions that have yet to be asked, methodically crush healthy intellectual vigor and reduce the intellectual potential of young schoolchildren. This explains why the line from Marina Tsvetaeva’s “Poets”—“The one who asks questions from behind a school desk”—is used to conjure the image of someone extremely odd who flagrantly violates the rules of common sense. An inclination to “ask questions from behind a school desk” is an exotic trait, one possessed by those who do not fit within the confines of rules, custom, or manners.

Our experiments show that this enfant terrible is a developmental norm for young schoolchildren (the norm for optimal rather than average development). Admittedly, realizing this developmental norm requires creating a completely different developmental social situation, one based on different
relationships between children and adults in the classroom. This does not mean that relations must be more democratic, humane, or warmer: they have to enable the opportunity and need for children’s initiative in organizing joint learning actions. A new system of relations built on children’s initiative in organizing learning collaboration would resolve the main contradiction in modern elementary schools, which expect learning independence in children while stifling their efforts to teach themselves with a teacher’s help.

To foster this inclination toward independently building content-specific interaction with a teacher and to give it the cultural form of learning collaboration, familiar classroom relationships have to be turned upside down. Instead of inculcating learners with an ability to answer questions well, they must be inculcated with the ability to ask them well.

In talking about the need for new, unfamiliar relationships between learners and teachers, we understand that the new is really the well-forgotten old. The view of a learner as someone who is skilled at inquiry has existed for centuries: the schools of Confucius, Socrates, St. Augustine, and Alcuin mostly taught intelligent questioning (Schmidt, 1890). But the questioning techniques used by these and more modern schools are not suitable for educating young schoolchildren. Chapter 6 [not translated here] will describe the approaches to teaching questioning that were used in our formative experiments. For now, our focus is the specific nature of questions asked by young schoolchildren able to learn from an adult and the difference between a learning question and the endless questions asked by preschoolers.

The Teacher as an Essential Term of the Problem

By exploring the origins of subjecthood, of the exercise of selfhood in children’s actions, we have determined that children are independent in intermental situations to the extent that they—on their own initiative—are able to participate in constructing joint action. We have also linked this initiative with how well forms of collaboration have been assimilated. Preschoolers exercise initiative in play when they involve an adult in play
rather than interpersonal communication. Schoolchildren exercise initiative in joint-learning actions when they involve the teacher in solving learning problems rather than concrete, practical ones.

As we examine the very fabric of INTERmental, INTER-subject actions, we must not ignore the obvious fact (unfortunately, so obvious as to evade notice) that children approach a problem based on how their relationship with the adult assigning it is defined (Venger and Polivanova, 1988). This means that the adult, as a partner in interaction, is an objective, essential, nonrandom “element” in the orienting basis of intermental action. The conclusions learners draw about what actions—or rather what form of interaction—the teacher expects affect how they complete the definition of an ambiguous problem. Of course, the teacher enters into the orienting basis of children’s action as they solve an assigned problem not as a physical presence with individual characteristics, but as a partner in communication with expectations of a particular type of interaction characterized primarily by how responsibility will be divided between the partners. Children’s reasoning as they assess this partner’s expectations might be reflected in thoughts such as:

Since the adult has invited me to play a game, this is the sort of task where I’m allowed the freedom of play substitution and I can react depending on how the game goes: I don’t have to write my name in beautiful handwriting; I can just write however it comes out. If I see that the adult is skilled and is inviting me to engage in imitative collaboration, that means I’m expected either to demonstrate previous models of action or precisely reproduce new ones. If I don’t succeed, the adult will show me again and I will try to remember how to do it.

In our experiment, the troublesome “blue cup” that fit in neither the red pile nor the green pile proved to be a stumbling block for children inclined to follow adults’ instructions literally: since the adult did not say anything about blue things, that meant there were no blue things, since the adult is the highest authority, the conveyor of the most correct rules, the most perfect models.
In learning situations, adults expect children to “act in accordance with the logic of the problem,” even if this means deviating from the model or instructions provided and creating new ones. New means of action have to be put to two tests to ensure that they correspond: (a) to the terms of the problem and (b) to the expectations of the adult. This is why more than half of the children in the experiment described above queried the adult with questions that reflected the following thinking: “Are you letting me act in accordance with the logic of the problem or do you expect me to punctually fulfill my task, uncritically accepting your words? Who are you now—a teacher helping me to figure out how such problems are solved or a skilled person whose model should be imitated? What is the problem we are solving: a learning problem or a concrete, practical problem?”

In taking such liberties in reconstructing child consciousness, we want to uncover the two-part nature of the problem being solved when a child engages in joint action with an adult. For learners to correctly solve a problem it is not enough to skillfully handle its objective conditions; they must properly define the interactional situation the teacher has in mind in posing the problem. In order to understand the genesis of learning collaboration and capture the moment when mutual expectations of nonimitative actions that rely on the logic of the problem emerge, it is helpful to examine lessons where the lines of learning collaboration are first distinctly differentiated from other forms of collaboration.

For this, problems that are not fully defined are extremely useful. When teachers first give children a problem with a missing term that resembles problems they have already mastered, children usually start guessing: they offer an answer, counting on the “correct” behavior of the adult, who (according to classroom rules) either agrees or asks: “Why?” Then the learner has to make corrections and again either gain approval or be sent back to work: “Think about it. Try again!” This continues until this guessing game results in the happy attainment of an “excellent.” Series of unsuccessful guesses are usually followed by a pause. Underlying the class’s embarrassed silence is children’s attitude
toward the situation of learners unable to answer the question of the teacher, in whom they see first and foremost a skillful, all-knowing adult whose example must be emulated as exactly as possible. In the face of this exemplary adult, children feel small, inept, and blame themselves for being unable to solve the problem: “I can’t do it, which means I’m not doing it the way I was shown.” They expect a very specific kind of help: for the teacher to again model the means of obtaining the answer. At this point teachers must change the children’s understanding of their expectations and of the “correct” division of responsibilities between child and adult. For this to happen, the preschooler’s “I can’t do it” must be replaced with the learner’s “I’ll be able to do it if I find out X.” Let us take a close look at how a teacher moves children from the preschool “do what I do” to the teaching formula: “I will help you if you tell me what it is you’re having trouble with.”

Teacher: Children, it’s not your fault. Even a professor wouldn’t be able to answer my question. Now you can ask me questions.

Remember: a learner is someone “who asks questions from behind a school desk.” The first (for now purely superficial) requirement of a learning relationship has been established. Oksana attempts to fulfill this requirement in the most superficial way possible.

Oksana: What question should we ask you?

This is the sort of truth-is-stranger-than-fiction interaction “you can’t make up.” The little girl is trying to stay within the framework of the familiar relationship of doing just what a skilled adult asks her to do. She was told to ask, so she asks for this asking to be modeled and is ready to eagerly replicate this model. But tension has already been injected into the problem situation. The first insight is just around the corner.

Maxim: I know! I know! (He goes on to formulate a question about the problem’s missing term.)

Teacher: Good job, Maxim! Your clever question has helped us all escape our dead end. I’ll reply.
This scenario represents children’s first introduction to an actual learning relationship with an adult as teacher (rather than as a skilled person or a playmate). This newborn learning initiative means that, having reached the limit of their knowledge and ability, children turn to the teacher not with a general request for help (“I can’t do it”), but with a request for very specific assistance. Focused on the problem rather than the adult who has posed it, learners seek the cause of difficulty not in their own inability (lack of effort), but in the terms of the problem: “Some information is missing. If I find out X, I’ll be able to solve the problem.” To sufficiently define the problem, learners turn to the teacher once they have figured out just what means and methods of action are needed. When preschoolers reach the limit of their abilities, they ask an adult to take them farther. When learners reach the limit of their abilities, they take another step forward and turn to the adult from their position of missing knowledge.

Imitative behavior is typical of children whose experience of other (learning) relationships with a teacher are meager in comparison with their extensive experience doing what they are told or exactly reproducing models. Because of the flaws of our techniques for building learning relationships over the course of elementary education, some children never advance from preschool relationships with adults to learning relationships. We will henceforth refer to schoolchildren who have not mastered learning collaboration as schoolees (those being “schooled” by adults). Such children are distinct from learners, from subjects of learning activity, who want and are able to teach themselves with an adult’s help.

However, although it is crucial that children also experience other forms of collaboration with teachers, “schooling” collaboration has value. If children are never schooled in certain behaviors, they will suffer a severe lack of classroom skills because children excessively focused on quests for knowledge will not be predisposed to complete their assignments. Having discovered a new principle that can be used in solving problems, they will neglect work on refining skills for solving problems of the same type. Their abilities will never
become automatic and their seeking efforts will not be bolstered by the necessary means.

The Object-Focus of Learning Collaboration

Two factors shape children’s image of the object of learning activity: the content that the adult assigns and the adult him- or herself, as the child’s partner in a joint effort involving this content. And how children view and define a problem is integrally tied not only to its content but also to the type of interaction that arises—intentionally or not—between teacher and child. This understanding of intermental action provides a fresh perspective on the classical problem of the learner’s and teacher’s understanding of one another. Usually, attempts to solve this problem take place on two intersecting planes. When children “don’t understand” a teacher’s explanation the cause is usually sought in methodological flaws, the technique used in presenting a lesson’s conceptual content, or in a defect in the interpersonal relationship between the child and adult (an insufficient appreciation of the child’s individuality or a lack of love, warmth, acceptance, or support). Similarly, the cause of a building’s unsoundness might be sought in deficiencies either in the materials used to build it or in the failure of builders to provide it a solid foundation. The foundation on which all learning activity rests, from which all neoformations spring, is the joint solving of learning problems. Its foundation will be sound only if the child and adult are focused on the same object: if they are working on the same problem within the same system of relationships. It should again be stressed: this is less a matter of the subtle, intimate details of human relationships, expressed in terms of trust, equality, acceptance, respect, sympathy, and empathy, than it is of the “crude,” primary characteristics of interaction, of the immediately defined content of the joint actions and expectations of the partners in regard to the norms of how “responsibilities” are distributed.

Psychological and pedagogical literature offer copious evidence of how common it is for learners to understand a problem being assigned differently from how the teacher
intended, as a result of which children make substitutions, do not appreciate the problem presented, and formalize the concepts introduced. Numerous observations of this phenomenon support the suspicion that learner–teacher collaborators work at cross-purposes more often than not. According to evidence compiled by V.T. Dorokhina (1980), children redefine approximately 60 percent of problems assigned by their teacher.

In discussing this phenomenon in learning collaboration (especially during its early stages), we should be aware that this is not a matter of annoying cases of flawed pedagogical practice, but of the inherent divergence of perspective during interactions between a teacher, who possess academic knowledge, and children, who possess real-life knowledge (Vygotsky, 1982, vol. 2).

In introducing the question of whether or not the child and adult are focused on a common object in learning interaction, certain stipulations should be made. The term “common object” is not intended to imply that the objects of the learner’s and teacher’s action are absolutely identical. In fact, we believe that child–adult learning collaboration is productive only when the object of interaction overlaps just partially. Adults manage a common object of collaboration only if they constantly keep in mind the features of the child’s perspective both on the content and the form of interaction. In other words, the teacher’s object of action must not be limited to the educational content itself; it must also include the learner’s position—the position of partial knowledge and a nonnormative understanding of both the problem’s content and the teacher’s expectations.

However, if the teacher’s efforts to be understood are one-sided, are not reciprocated by the children, these children will be taught, will be the targets of sophisticated teaching techniques, but will not be learners—active initiative-takers in the joint-learning process, nor will they learn to enter into learning relationships on their own. The effort to maintain the commonality of an object of learning action can and must be two-sided and genuinely cooperative, and the common content of cooperative learning activity can and must be specifically shared content—the common content of a common object.
To understand how learning collaboration—the work done by a child and adult to achieve mutual understanding, to clarify the perspectives of all participants in interaction—is structured in real life, let us examine a scenario from a first-grade language lesson. Sounds are being analyzed, but letters have not yet been introduced.

Teacher: How many sounds are in the [English] word SIX? Count the sounds and show me the answer on your fingers.

(Some children raise three fingers, others four or six. The teacher writes down the three answers on the board and asks proponents of each answer to argue their case.)

Teacher: Vanya, prove to us that six is the correct answer to my questions. Count out loud.

Vanya (counts, bending back his fingers): One, two three, four, five, six.

Teacher: Children, does Vanya count to five well? Did he mix up the count?

Children: No, he counted well.

Teacher: I also liked how Vanya counted. I will give him a plus for that. And did you notice what Vanya was counting?

Children: His fingers.

Teacher (writes the answer on the board and explains): I am writing: Vanya counted his fingers well. Thank you Vanya. You did a great job of showing how you got an answer of “six.” Rita, you got an answer of “four.” Show us why you’re right. Count out loud.

Rita: [siks].

Teacher: Rita named all the sounds in the word SIX. (Writes Rita’s answer on the board using symbols familiar to the children Y for vowels, □ for consonants.)

Teacher: Fedya came up with the answer “three.” Fedya, prove to everyone that you’re also right. Count out loud.

Fedya names the letters: S I X.
Teacher: Fedya already knows how to write. He has correctly named the letters in the word SIX.

(The following notation is made on the board; see Figure 3).

Teacher: You see, everyone counted correctly. Everyone has learned to count. But why did we get different answers?

Timosha: Three letters, four sounds, and six fingers.

Teacher: You see, everyone was counting different things. And now the hardest part: What did I ask you to count? Listen to my first question: “How many sounds are in the [Russian] word piat’?” Which children answered my question?

By bringing different perspectives out into the open, the teacher helped the class perform four tasks at once: (1) analyzing sounds; (2) recognizing the difference between sounds and letters; (3) grasping the difference between a word’s meaning and its sound (not easy for children with a naive, natural linguistic consciousness for which “the word is transparent for the object”); and most important, (4) discovering that different answers can all represent intelligent, correct thoughts, that there are no wrong answers, although some answers do not match the question asked. The first task, which requires reproducing familiar models, is a training rather than learning task. The second and third tasks are designed to teach that there are different ways to understand the sound form of a word—the main object of the lesson—and to clarify why some viewpoints are normative and others are not.

For children to know what they do not know, they have to compare their viewpoints with other viewpoints. In our example, the teacher did the job of bringing the differences between viewpoints into focus. But in just half a year, this task will be
accessible to the learners as well. For example, the first-grader Marina T. transformed a linguistic task into a math problem—“Divide the [Russian] word *chetyre* in half”—and solved it as:

\[ 2 + 2 = 4. \]

But later (that evening when telling her mother about her day) she started crying: “The teacher asked me about a word and I answered about a number!”

The important aspect of the situation described here is the form of learning relationship, not the learning content. The teacher clearly brought out a diversity of understandings, created a situation where many perspectives on the object of the lesson were evident, and demonstrated to the children that participants in a single conversation can be talking “about different things.” Mastery of forms of learning collaboration and of seeing partners’ mutual expectations develops in the course of such collaborative problem solving. An atmosphere of classroom discussion is fostered where the only way to be wrong is to have no viewpoint whatsoever, but where the people who are “most right” are those who try to clarify and coordinate the positions of those collaborating in the search for truth. An example of this is second-grader Sasha L., who commented during a discussion of a composition by a boy in her class: “I know why some people like Dima’s composition and others don’t. It’s a very boy composition. (She quotes lines supporting her thesis.) Only people who like boy stuff like it.”

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As discussed, the main features of child–adult learning collaboration are:

1. Learning collaboration is focused on a common object, the child and adult have a single task and a single system of relationships. The learning task that unites them requires a search for means of action that are common to a certain category of problem. The system of relationships that unite them requires a search for means of interaction common to both participants, which presumes that differing viewpoints will be uncovered and coordinated.
2. The object of learning interaction is never exactly identical for the learner and teacher, since they have utterly different ideas about the content of joint actions and their partner’s expectations. Ensuring that these partners share a common focus demands constant attention to how each of them understands the task at hand. It is crucial that divergences of understanding and their causes be immediately identified so that different positions can be coordinated and common focus can be restored.

3. Efforts to ensure that learner and teacher share a common object of collaboration must be two-sided: the learner must take initiative in constructing joint actions with the teacher. The extent of children’s initiative in organizing learning collaboration is a measure of their learning independence.

4. Learners who invite the teacher to collaborate are not imitating the teacher’s actions. They are acting in a situation where there are no readymade models, where reproduction is impossible. This is why they have to offer the teacher their hypothesis concerning what actions can be taken under new conditions. By pointing to the contradictions between the means of action they have already assimilated and the new conditions, children develop knowledge of their own lack of knowledge—they pose their own learning problem.

5. The place for imitative collaboration, for “schooled” reproduction, is problems designed to develop skills by mimicking the teacher’s actions. The place for nonimitative, reflective, learning collaboration is problems that require seeking, not reproduction. School requires the ability to handle both kinds of problems, but subjects of learning activity—those able to teach themselves, at first through the help of a teacher—emerge only through the process of learning collaboration.

The only way to cultivate learners who are willing to risk thinking and acting independently is through constant exposure to different positions and viewpoints, all with their own logical merits. Drawing attention to the positions of every participant in a
learning discussion and ways of coordinating them to further joint action—this is the content of learning collaboration, not to be confused with the content of the learning tasks themselves. Children able to teach themselves with an adult’s help are able to discover their own position, reconcile it and compare it with other viewpoints, and, most important, revise their position and go beyond its limits. Next, we will discuss how to bring this about.

Notes

3. “If an invisible cat is lying in a chair, the chair appears to be empty. It seems empty. Therefore, it contains an invisible cat.” K.S. Liuis, “Liubov’,” *Voprosy filosofii*, 1989, no. 8, p. 124.
4. This diagnostic task was developed by E.A. Bugrimenko (El’konin and Venger, 1988, pp. 73–77).