

NELL K. DUKE
VICTORIA PURCELL-GATES
LEIGH A. HALL
CATHY TOWER

Authentic literacy activities for developing comprehension and writing

Explore what is meant by “authentic” literacy and discover how this approach can spark reading and writing across genres and subject areas.

Ms. Jones (all names are pseudonyms) hushed her excited second graders. She began to read aloud a letter from the director of the local nature center. All of the students recalled their recent trip to the pond as part of their science unit on pond life.

Dear Boys and Girls,

I hope you enjoyed your visit to our pond. I enjoyed answering your many good questions about what lives in ponds. After you left, I thought about all of the other children who visit us and who also have many of the same questions. I thought it might be a good idea to have a brochure for them with answers to some of their questions. I am writing to ask if you would prepare a brochure like this. It could be called something like “Questions and Answers About Pond Life.” You could include some of your questions that you had before you visited us. If you write this, I will have many copies printed that we can put in the main office. That way, people can pick one up when they come or as they are leaving. I hope you can do this for us.

Sincerely, Mr. Hernandez

After a quick vote of approval, the students went to work. They studied similar brochures collected from museums and other sites of natural science. They worked in groups to brainstorm questions for the brochure, after which they researched answers by reading from a variety of sci-

ence texts. Finally, they wrote drafts of their text until they were satisfied it would serve as a useful information brochure for the public. Their final draft was published as a brochure and displayed in a stand in the front office of the nature center, where many visitors appreciated its availability.

Authentic literacy

The second graders in Ms. Jones’s science class were actively involved in what we consider to be authentic literacy. We documented this incident, and many others, over the course of a two-year experimental research study of genre learning in second- and third-grade science classes. In this article, we provide a brief introduction to authentic literacy and to the research study. We then discuss theory and research behind authentic literacy. Finally, we share lessons from teachers about setting up authentic literacy activities in their classrooms. We hope to provide teachers with many ideas for their own practice.

The terms *authentic literacy* and *authentic reading and writing* are familiar to many teachers. We are encouraged to include authentic literacy activities in our instruction. Students, we believe, need to read authentic literature and to engage in authentic writing. But what *is* authentic literacy? In many ways, the term is a pedagogical one. People who are not involved with issues of instruction do not use it. Yet to many teachers, authentic literacy means reading and writing that is unlike the kind done in school.

In the research literature, authentic reading has primarily been defined in terms of children's literature (Hiebert, 1994). Authentic writing is often defined as writing on topics of one's choice, which can take the form of a personal narrative or story. When asked to define authentic literacy, the vast majority of preservice and inservice teachers respond with notions of "interesting or motivating," "relevant topics," "fun," or "classical and contemporary children's literature." Returning to the scenario of Ms. Jones's second graders and their response to a request for a pond-life brochure, these definitions seem incomplete. They also are not consistent or specific enough to be sufficiently useful for teachers or researchers.

We confronted these problems of defining *authenticity* when conducting a study that involved engaging students in authentic literacy activities. We needed a definition of authentic literacy that would help teachers in our study create authentic literacy activities and that would help us recognize these activities when we saw them—we needed an operational definition. We give this definition, and many more examples of authentic literacy activities, later in this article.

The study

Our two-year study involved 26 second- and third-grade teachers and their students from school districts serving families of low and middle socioeconomic status (see Purcell-Gates, Duke, & Martineau, 2007). Our interest was in the development of students' ability to comprehend and compose informational and procedural texts in science (definitions of informational and procedural texts are provided later). All of the teachers in our study worked with us to introduce authentic literacy activities with informational and procedural texts in science and to understand the construct of authentic literacy.

Authenticity theory

Why were we so committed to including authenticity in all the classrooms in this study? Why do we believe that authentic literacy activities should be part of any instructional model designed to teach comprehension or writing? We believe in

theories of situated learning—that learning happens in particular contexts (Brown, Collins, & Duguid, 1989), that these contexts make a big difference to learning, and that it is difficult to transfer learning to new contexts. Language is best acquired within functional contexts (Gee, 1992; Hymes, 1974). Students learn language not in abstract, de-contextualized terms but in application, in a context that language is really for. For students, language learning occurs best when the learning context matches the real functional context. Scholars from a range of theoretical and pedagogical orientations agree that authentic experience is essential to genre and discourse learning (Delpit, 1992; Lemke, 1994; New London Group, 1996; Reid, 1987). However, there is little agreement, or clarity, on the conceptualization of authentic literacy.

Authenticity research

The extent of the research base for authenticity depends a lot on how authenticity is defined. Given the definition we propose, and focusing on literacy only, the research base is not large. However, in a nationwide U.S. study of adult learners, researchers found that adults in programs with more authentic literacy activities reported (a) reading and writing more often in their out-of-school lives, and (b) reading and writing more complex texts (Purcell-Gates, Degener, Jacobson, & Soler, 2002). And the longer the students remained in these programs, the more this was true.

In our study we, too, found support for authentic literacy activities (Purcell-Gates & Duke, 2004). We monitored the authenticity of literacy activities with informational and procedural texts in science weekly. Two or three times each year we also assessed students' ability to comprehend and to write (compose) informational and procedural texts in science. We found that those teachers who included more authentic literacy activities more of the time had students who showed higher growth in both comprehension and writing.

Other effective approaches to literacy education include activities we would classify as authentic, although they may not use the term *authenticity*. For example, Concept-Oriented Reading Instruction, or CORI (Guthrie, Wigfield, & Perencevich, 2004), involves students reading

and writing trade books and other authentic texts for the purpose of learning about something of interest to them and communicating what they have learned to others. Other approaches, and certainly many individual classroom teachers, involve students in activities we would characterize as authentic.

An operational definition

We conceptualize authentic literacy activities in the classroom as those that replicate or reflect reading and writing activities that occur in the lives of people outside of a learning-to-read-and-write context and purpose. Each authentic literacy activity has a writer and a reader—a writer who is writing to a real reader and a reader who is reading what the writer wrote.

To judge the authenticity of a literacy activity, we look at two dimensions: *purpose or function* and *text*. Authentic purpose or function means that the activity serves a true communicative purpose—for example, reading informational text to inform oneself or to answer one's own questions, or writing to provide information for someone who wants or needs it—in addition to teaching and learning particular skills or content. To be authentic, a text (written or read) must be like texts that are used by readers and writers outside of a learning-to-read-or-write context (i.e., to serve communicative purposes or functions). For example, a newspaper read in class must be either a newspaper brought in from outside the classroom or a newspaper specially written for the classroom that is close to identical in form, language, and so on to one from outside the classroom.

These authentic texts and purposes are contrasted, within our frame, with those texts written primarily to teach reading and writing skills for the purposes of learning to read and write or to develop literacy skills, strategies, values, and attitudes—literacy activity we term “school only.” Prototypical school-only texts include worksheets, spelling lists, short passages with comprehension questions, flashcards, and lists of sentences to be punctuated. School-only purposes for reading these texts are to learn or improve reading and writing skills. School-only purposes for writing these texts would be to assist in the teaching and learning of literacy skills.

Authentic texts can be read or written with school-only purposes, rendering the literacy activity less authentic (i.e., more school only). For example, novels can be read in preparation for an exam on comprehension and interpretive skills, news articles can be read to identify new vocabulary words, or fliers can be composed to complete a history unit with an innovative assignment designed to link to art and language arts. Each of these examples includes an authentic text read for a school-only purpose. To be considered highly authentic, a literacy activity must include an authentic text read or written for an authentic purpose. Authentic literacy activity in the classroom is always accompanied by school-only (or literacy teaching and learning) purposes, simply because that is the overall purpose of school—teaching and learning. However, literacy activities can become authentic for students if teachers attend to those aspects we have just discussed: text types and purposes for reading and writing them.

In our study, the focus was on authentic literacy activities with informational and procedural text in science. We defined the purpose of informational text as being to convey information about the natural or social world, with the text typically written by someone presumed to be more knowledgeable on the subject for someone presumed to be less so. We defined the purpose of procedural text as being to tell how to do something, with the text typically written by someone who knows how to perform that action for someone who does not. Authentic uses had to include these purposes for reading and writing informational and procedural texts in addition to the instructional purposes held by the teachers.

We used a 3-point scale to rate the degree to which the purpose of an informational text being written or read in the classroom mirrors the actual purpose of an informational text (e.g., to learn something that you want to know about a topic). We also rated the degree of authenticity of text on a 3-point scale. For literacy activities involving writing we did not rate the authenticity of the text. In order for the activity to be rated (i.e., for it to be classified as informational or procedural) it had to involve actual and therefore authentic informational or procedural text. Our rating categories for purpose and text are described on the authenticity rating sheet (see Figure 1).

FIGURE 1
Authenticity rating sheet

Brief description of activity, including (a) text students are reading, writing, or listening to, and (b) purpose of students' reading, writing, or listening:

Authenticity of purpose

Rating: 3 2 1

3 = This reading, writing, or listening-to-text purpose exists in the lives of people outside a classroom, or it is as authentic as the use of that genre for that purpose can be.

2 = This reading, writing, or listening-to-text purpose exists in the lives of people outside a classroom, but it differs in that for reading the impetus is less personal and for writing the audience is less compelling.

1 = This reading, writing, or listening-to-text purpose is identified by its absence of any purpose beyond school work. This takes different forms depending on the genre and process (reading or writing).

Authenticity of text

Rating: 3 2 1

3 = This text type occurs naturally in the lives of people outside a classroom. You can find it in bookstores or order it for home delivery. This category also includes texts that are written primarily for instructional purposes but that closely mimic the naturally occurring texts—the only difference being the publisher's audience.

2 = This text is written primarily for use in schools and, although it mimics to an extent the genre style, form, and purpose of those texts that do occur naturally outside school, it includes enough school "stuff" to be recognizable. This type would include texts that have comprehension questions, special vocabulary sections, and perhaps even "Checking What You Have Learned" sections. These texts are hybrid forms reflecting school and authentic genres in different combinations and emphases.

1 = This text would not occur anywhere except in a school or other teaching and learning contexts. It is written to teach skills and is used only for learning and practicing skills. You may be able to purchase these texts in stores but they reflect a skills-learning purpose.

Total authenticity rating: _____

Examples of literacy activities and how they would be rated are provided in Table 1. As you can see, highly authentic reading and writing of informational text involves *seeking and acquiring information* (for reading) and *providing information* (for writing). Authentic reading and writing of procedural text involves *doing procedures* (for reading) and *enabling the doing of procedures* (for writing).

Classroom activities: Lessons from teachers

The remainder of this article focuses on how teachers in our study established conditions for authentic reading and writing of informational and procedural texts in science. These portraits are

based on our analysis of literacy activities rated 3 (highly authentic) for both purpose and text. The teachers participated in summer workshops devoted to building an understanding of authentic literacy, and each teacher was coached once a week for the entire year she or he was part of the study.

Over time, the teachers developed many different strategies for establishing authentic literacy events in science. We identified and categorized them in order to share these strategies with other teachers.

Authentic reading of informational text in science

To establish authentic contexts and purposes for the reading and writing of informational text, the teachers looked for different ways to generate

TABLE 1
Examples of activities with differing levels of authenticity of purpose

Activities and text type	Rating 3	Rating 2	Rating 1
Reading activities, informational text	<p>Following an activity using owl pellets, students were asked to generate questions about owls and their habits. These questions were listed on chart paper and grouped. Small groups of students were assigned to read informational texts to find answers to the questions, which were then shared with the class as a whole.</p> <p>The day following the eruption of a volcano in Mexico, a discussion arose about volcanoes and how they happen. Students disagreed about where the lava comes from and how hot it is. The teacher put together a group of information books about volcanoes. She distilled the questions and assigned students to work in pairs to read for the answers to the questions.</p> <p>A student brought in a snake skin to class. Several questions arose from the group about why snakes shed their skin and how long it takes to grow new skin. The teacher found an information book about snakes, located the answers, and read those sections to the class.</p>	<p>The teacher suggested that the kindergartners would like to have information books on reptiles. She asked for topics and divided the class into small groups. Each group read to find information to put in the books for the kindergartners.</p> <p>The class went outside to collect rocks from the playground. When they returned, the teacher suggested writing an information pamphlet about the rocks at the school for parents who might not know about them. The students read informational text about rocks and prepared the pamphlets to take home to their parents.</p>	<p>In the science unit "weather," the teacher chose five topics or concepts related to weather and created five centers, each focusing on one concept. At each center, the teacher placed informational texts on these topics, accompanied by reading guides that the students used to find out the designated information from the texts. Students rotated through the centers.</p> <p>The teacher demonstrated how to find answers to questions that students had been assigned to answer and she talked through her thinking as she looked for the answer in an information book, located the information, and read the answer to the class.</p> <p>Students were assigned an information book about where insects live. They were to find all the highlighted vocabulary, write out the words, and write the definition of each word or word phrase as provided by the book.</p> <p>Students were given an informational text on tornadoes. The teacher led them through a lesson where each heading was read aloud and the students were then asked to predict what the section following the heading would be about. They read to confirm their hypotheses.</p> <p>While the students watched and listened, the teacher did a lesson on indexes. She put five words on the chalkboard and demonstrated how to look in the index of an information book, find a word, and locate the page number where the word appears.</p>

(continued)

TABLE 1
Examples of activities with differing levels of authenticity of purpose (continued)

Activities and text type	Rating 3	Rating 2	Rating 1
Writing activities, informational text	In pairs, students researched a topic that they believed would be of interest to children in Mrs. X's class. Mrs. X's class generated questions and sent them to the students to guide them. The students' ultimate purpose was to write and publish information books on each topic and present them to Mrs. X for her class library.	The teacher led the class in composing an information pamphlet about what was discovered in the dirt in the playground. She elicited "text" from the students and wrote it on chart paper. The pamphlet was to be sent home to parents, for display and also to provide information about the school playground.	The teacher told the class to imagine that an alien lands in the playground and sees a pine tree there. This alien asks one of the students what the tree is. The assignment was to write an information book about trees for the alien.
	The kindergarten class requested picture books about animal babies. In groups of three, students created the books. They either drew or used cut-out pictures, and they wrote accompanying labels, captions, or sentences. They laminated each page and bound the books, which were presented to the kindergarten class and read aloud by the students who created them.	Students contributed as a group to an information pamphlet that was posted as a class project in the hallway on Back-to-School Night. The topic was assigned as part of the district-mandated curriculum on force and motion. The teacher did the actual writing.	The teacher told the class that each student was to pretend to have a pen pal in another country. The students wrote an information book about the plants that grow in their backyards to inform pen pals who have never been to the United States.
	Students contributed text to an informational brochure to be printed and left for visitors to a local nature center. This project was prompted by the guide at the center after the students had visited there. He wrote a letter to the class requesting the brochure.	The teacher suggested writing information books for the kindergartners. She elicited questions from the class on what they thought kindergartners would like to know. She assigned groups to read to find the answers to the questions and then to write an informational text for the kindergarten library.	Students answered questions referring to sample procedures such as these: How many materials are required? What are you supposed to do after you have poured the water into the glass?
Reading activities, procedural text	Students were given a procedural text about a concept related to force and motion. They were asked to read and follow the procedures individually. The class then reconvened to discuss the concept, or "point," of the demonstration.	Students were tested on their ability to follow a procedure. Teachers read to students or students read a prepared procedure. Students were evaluated on their ability to follow the directions.	

(continued)

TABLE 1
Examples of activities with differing levels of authenticity of purpose (continued)

Activities and text type	Rating 3	Rating 2	Rating 1
	<p>As part of a unit on insects, students decided to build and stock their own ant farm. They found instructions on the Internet and divided into groups to build a farm and to stock it.</p> <p>The teacher read from a procedural text and demonstrated procedures while the whole class listened and watched. The focus afterward was on the science concept demonstrated or tested.</p>	<p>In a lesson on force and motion, the culminating activity was a demonstration procedure. Each student pair was given the procedural handout and told to follow it. The point was to get the procedure to come out right and to enjoy a hands-on activity at the end of a lesson. As students finished, there was a lot of laughter, pats on the back, cleaning up, and a sense of ending the day or week. But there was no more "science" talk around the concept of force and motion.</p>	<p>Students read through procedures for demonstrating that fire will not burn in the absence of oxygen. They were told not to try this themselves.</p>
Writing activities, procedural text	<p>Students were assigned different tasks related to growing corn inside their classroom. As spring break approached, they composed—in their task-related groups—a list of instructions for the aide who had volunteered to take care of the plants while the students were away.</p> <p>Students created a procedures book that will be passed on to the class next year. They worked in pairs to create procedures for demonstrations for key science concepts. Each pair picked a different one from a list generated by the teacher. As part of this, they had to "field test" their demonstration by doing it according to their written procedures. The teacher fully expected the students to use the procedures to help learn the concepts.</p> <p>The teacher led the class in composing a procedural text. She elicited text from the students and wrote it on the board. The students then copied the text to be included in their individual procedures book that they will eventually take home and use.</p>	<p>Following a lesson on planting seeds, the teacher assigned students to write a procedure for doing so. They were to use all that they had learned about planting seeds. They took turns following one another's procedures to see how well they were written. Many had to do rewrites.</p> <p>After a unit on underwater plants, students were assigned to create a procedural pamphlet telling readers how to prepare and care for an underwater plant aquarium. They worked with the teacher to compose it, and the teacher saved the finished products for next year's students.</p>	<p>Students were told to pretend that an alien arrived at their school and wanted to know how to take care of baby chickens. The teacher assigned students to work in groups of three and prepare a "how-to" pamphlet for the alien. The teacher led these groups in composing this procedural text. She wrote it on chart paper or on the chalkboard.</p> <p>Students watched and answered questions while the teacher wrote parts of a procedure on the chalkboard in a lesson on "writing procedures." Teacher questions were of this type: Now, what do I call the section that lists the things you need? Materials, that's right. I'll write that right here.</p>

the need to seek information that the student readers required or wanted to know. Teachers often generated student questions prior to the reading of informational text. These types of set-ups fell into several categories.

Hands-on demonstrations. Teachers conducted demonstrations to generate questions as well as general interest in a science topic the class was about to study. For example, one teacher created a model volcano and, by pouring a solution of baking soda and vinegar into the top, caused a reaction that looked like a lava eruption. Another teacher brought in caterpillars for the students to observe and handle. Questions that arose naturally or in response to the teacher's elicitation were used to inspire and guide informational reading. Teachers recorded questions on a clipboard as they circulated, and wrote them on chart paper during a group discussion. This integration of hands-on, or first-hand, investigations with text-based, or second-hand, investigations is supported by a number of research studies (e.g., Anderson & Guthrie, 1999; Palincsar & Magnusson, 2001; Romance & Vitale, 2001).

Teachable moments. Teachers responded to unexpected events in ways that connected with their science instruction. For example, a second grader appeared in class one day with her arm in a cast. Her teacher, realizing that she could use this unfortunate accident for her unit on the skeletal system, centered the class discussion on the student's broken arm. Questions like "How did you break it?" "Does it hurt?" "Which bone is broken?" were asked. Students read many informational texts on bones that day. Another teacher proceeded in a similar manner when a student brought in an unusual and interesting rock, in response to a unit on rocks.

Topic announcements. K–W–Ls (Ogle, 1986) were often used by teachers for eliciting questions about topics. These activities followed the K–W–L template for the most part (K = what we know; W = what do we want to know; L = what we have learned). The teachers first elicited what the students knew—for example, about sound. Then they elicited questions the students had about the topic—what they wanted to know—structuring their reading of informational text about sound. In a similar approach, teachers announced a new science

topic, read aloud from a text about it, and then asked students if they had any questions on that topic. These questions guided future reading.

Discrepant events. Finally, teachers set up situations involving *discrepant events* to generate questions about science content. A discrepant event reflects a reality that conflicts with what students might expect to see. For a study unit on light, one teacher set up a prism on the overhead while her class was out of the room. This caused rainbows to appear on the ceiling. When the students returned there were many "oohs" and "ahs" and a rush of questions about how the rainbow effects occurred. Capturing these questions, the teacher led the class in finding informational text on light to help them understand the phenomenon.

Authentic reading and writing of procedural texts in science

Given our operational definition of authentic reading and writing of procedural texts—reading in order to do a procedure and writing to instruct someone how to do one—the set-ups for these authentic literacy activities were fairly straightforward. Highly authentic reading of procedural text occurred when teachers let students in their science units read and conduct procedures that were an integral part of the content being learned (e.g., investigations intended to demonstrate science concepts). For the most part, students wrote procedural text for the authentic purpose of providing the requisite instruction to someone who would be reading the text when conducting the procedures. These could be procedures for conducting investigations, caring for plants and animals in or outside the classroom, and so on.

Authentic writing and reading

All of the teachers gave evidence of conceiving authenticity as a literacy construct—that is, as including writing, reading, and other language processes much of the time. This meant that teachers often used the communicative purposes of writing informational and procedural text as a rationale for reading. Although we can look at these data on integrated reading and writing activities in several ways, we use three lenses: literacy in response to

community need, literacy as part of problem solving, and audience as integral to authentic writing.

Literacy in response to community need. Our opening vignette is an example of this sort of set-up. Over the course of two years, several teachers arranged ways to involve their students in authentic reading and writing in response to community needs.

The teacher in our opening vignette, Ms. Jones, arranged this activity by asking the director of information at the nature center to write the letter to her class requesting the brochure. She posted an enlarged copy of the letter in the room for students to consult as they worked in groups to answer questions of “What kinds of things would other visitors want to know about?” The students were writing a text type that exists in the world outside of school (a brochure) to a real and appropriate audience for the purpose of providing information to their readers’ questions—all prerequisites of authentic informational writing. And it is worth noting that, although the teacher initiated the request for the brochure, the final text was published and made available to visitors to the pond at the nature center.

In another school, a teacher arranged for the principal to visit the class and ask students to take responsibility for the school garden that year. This task would serve as the culminating activity for the class’s study unit on plants and would involve reading about different flowers and vegetables and how to grow them (including soil, water, and light requirements). The students wrote informational text for the seed packets typically posted in gardens at the ends of rows and wrote procedural texts for other school and community members who would be responsible for caring for the growing plants over the summer.

Literacy as part of problem solving. A number of the teachers presented their students with real-life problems that required science knowledge to solve. The teachers wove authentic purposes for reading and writing into these problem-solving activities. At various times, students were faced with such problems as dying tadpoles and wilting plants, setting up class aquariums, helping their teacher’s father move from one home to another, and arranging for the removal of a large file cabinet that appeared inexplicably in the middle of their classroom one morning.

This last activity was the brainstorm of one of the second-grade teachers in our project. Her students were studying simple machines, and it occurred to her that an authentic purpose for learning about simple machines was to actually have to move an object from one place to another. She arranged with the custodian to deposit a large, heavy file cabinet in the middle of her classroom after school hours. When the students arrived the next morning, they and she were nonplussed: How did that object get there? And how to get it out?

She called the principal from the classroom as the class looked on and listened. The principal sent the custodian to the room and he explained that the delivery was a mistake but that he did not have time to move the cabinet. The teacher then convinced the class to take on the removal of the cabinet as a project for which they could use what they were learning about simple machines (levers, pulleys, etc.). Students worked in groups to read about ways that simple machines could help. They then wrote up their ideas and tried them out. As a culminating event, they wrote procedural texts for those who found themselves in a similar predicament and placed these texts in their classroom library under the topic of science.

Audience as integral to authentic writing. Audience is generally agreed to be a critical aspect of writing process and product. The construct of audience played a major role in our conceptualization of authentic writing as we thought about authenticity in the light of real-life writing practices. Outside an instructional context, literate people almost always write only if there is a reader for their writing, even if (in the case of journal or personal memo writing) the reader is the writer. One challenge for the teachers in our study (and, we suspect, for teachers in general) was the establishment of real audiences—or real readers—for the students’ writing. By *real* here, we mean a reader who will read the written text for its communicative purpose and not solely for evaluation, as so often happens to writing done in instructional contexts. The teachers rose to this challenge in admirable and inventive ways.

Teachers established real audiences and readers at different distances from their student writers. Many texts were written to be read by readers outside the school setting, such as the brochure written for visitors at the nature center. Others were

directed toward readers within the school but outside the students' classrooms. And many were composed for classmates, resulting in texts that reflected shared background knowledge.

Purposes for writing to a more distant reader.

Many teachers in the study proved to be inventive in establishing purposes for writing informational and procedural scientific texts for real readers outside their schools and, in some cases, outside their communities and countries. They called on personal and professional friends to act as readers and audiences. They took advantage of e-mail, the Internet, and other technological venues. And they worked with local community members to establish authentic contexts for authentic writing, as our example of the pond brochure illustrates.

One Michigan teacher arranged for a friend who teaches third grade in Costa Rica to request via e-mail some information books on Michigan's climate for her students. While reading and writing in response to this request, the Michigan students also learned about the climate of Costa Rica so they could better explain their weather through compare-and-contrast techniques. Other distant, authentic, teacher-arranged audiences included students who requested information on living things, light, and sound; visitors to the local library whose librarian requested information books on coral reefs; museum-goers whose director requested information sheets about light; and readers of the ZOOM website (<http://pbskids.org/zoom/>), which solicited science-related procedures from children.

Arranging within-school audiences. As teachers searched for authentic audiences for their student writers, they also found them within their school communities. These readers provided the distance that is pragmatically required for much writing but were more immediately accessible than those outside school. Students wrote information books on a variety of science topics for their school libraries, for "next year's class," "for the kindergartners" (who were often willing listeners), and for numerous other classes in their schools. For each of these writing events, which always required background reading, the teachers made sure that the students knew there was a real audience and that the texts would be read by that audience.

Informational texts other than books were also written for authentic audiences within school communities, always in response to a demonstrated need or request for such texts. Answers providing information about science topics were written as a result of a question jar placed in school libraries. Students were encouraged to write questions to put in the jar. Bookmarks with information on dinosaurs were written for students and made available in a central place. Posters like those found in natural history museums were placed in school hallways. Factoids on weather were written to be read over the public address system for the daily weather report. Video scripts about water were written and then produced for the morning announcement event in a school that featured television monitors in each classroom.

Authentic writing for within-school audiences also took place with procedural text. For example, teachers arranged with colleagues to request procedures for experiments that their classes could conduct. Or one class would serve as an audience for another in reading student-written text on how to grow lima beans.

Classroom community as audience. Finally, teachers would often turn to their own classrooms to provide purposes and audiences for the informational and procedural reading and writing. All of these activities, rated 3, could and do occur naturally in the world outside the learning-to-read-and-write context. For example, sometimes students would read about mammals with the purpose of sharing orally with class members interesting facts they discovered. Or students would write informational books on a variety of science topics for their class library, to be read by class members during the year.

Because procedural texts specific to the classrooms' science topics and curricula and appropriate for students of this age were hard to find, the rationale for writing procedures to demonstrate concepts under study was very natural and obvious. In these cases, students would often write different procedures in groups and then share them with classmates in other groups who would then conduct the procedures. One interesting example of this was the class that wrote procedures for creating different musical instruments (as part of a study of sound) and then exchanged them with other students who tried to build the instruments and play them.

A final example of writing for classmates is the production of informational posters on different science topics that were posted around the room for study and perusal. The actual reading of these posters took different forms—from special events akin to science fairs to more casual reading when opportunities arose, much like environmental print for the room. They were all written, however, to provide information for a reader who wanted or needed it, not simply as displays of products.

Learning to read and write while reading and writing

We offer these ideas and strategies, gleaned from teachers, for bringing authentic reading and writing into the classroom in the spirit of collaboration. As teachers struggle to make learning and learning to read and write meaningful and authentic, we believe it helps to share ideas and experiences. We also believe that although the strategies in this report came from second- and third-grade science teachers, they are generally applicable to different content and in higher grades. For example, taking advantage of current events, either in the

lives of the students or in the life of the community, to engender authentic reading for information is a natural activity for a social studies class. Authentic writing of historical text for real readers can also be incorporated into studies of history.

Furthermore, we encourage teachers to think beyond the specific genres we used for our study. The two dimensions of authentic literacy activities discussed—text type and purpose—can be applied to many different genres that occur in the daily lives of literate people. Some examples of such genres, along with various real-life purposes for reading and writing them, are included below in Table 2.

Many teachers attested to the power of authentic literacy activities. They reported that students came alive when they realized they were writing to real people for real reasons or reading real-life texts for their own purposes. Beyond this, the results of our research provide teachers with evidence that more authentic literacy activities are related to greater growth in the ability to read and write new genres (Purcell-Gates & Duke, 2004). With this additional motivation to involve students in authentic literacy activities, we believe that the strategies and scenarios offered here will be particularly helpful as teachers attempt to create

TABLE 2
Sample genres and purposes for reading and writing them

Genre	Purpose for reading	Purpose for writing
Informational text	To obtain information about the natural or social world	To provide information about the natural or social world to someone who wants or needs it
Procedural text	To make something or do something according to procedures	To guide the making or doing of something for someone who wants or needs it
Fictional narrative text	To relax; for entertainment, broadly defined; to discuss	To provide relaxation; to entertain, broadly defined; to foster discussion
Personal letter	To maintain a relationship; to learn about personal events; to share emotions	To maintain a relationship; to inform about personal events; to express emotions
List	To be informed about a related group of items	To record a related group of items
Biography	To learn about a person's life	To convey information about a person's life
Book review	To learn about a book and someone's opinion of and responses to it	To convey information about a book and one's opinion of and responses to it

opportunities to bring authentic literacy into their classrooms.

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Duke teaches at Michigan State University (350 Floor Erickson Hall, East Lansing, MI 48824, USA). E-mail nkduke@msu.edu. Purcell-Gates teaches at the University of British Columbia in Vancouver. Hall teaches at the University of North Carolina, Chapel Hill. Tower teaches at Prairie Creek Community School in Northfield, Minnesota.

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