

Introduction

The pleasures that come with teaching children to read are hard to match, and that is why so many of us keep teaching children in the youngest grades. We want to be a part of the magical process whereby children first learn how to turn letter symbols into meaningful language. Literacy is the single most important skill children learn at school. By means of literacy, children expand their world and enter any subject or realm on earth. But they must first master the skill of translating visual symbols into speech sounds. Only then will they be able to master the still more difficult skill of comprehension.

A great advantage of teaching in a Core Knowledge School is that the structure of the curriculum already answers some of the thorniest issues of literacy. Background knowledge is necessary to comprehend complex ideas and concepts. In a Core Knowledge School, every aspect of the curriculum is designed to impart to children broad background knowledge. From Kindergarten on, the children in Core Knowledge Schools are amassing important and significant information that writers assume their readers know.

Accumulating the vocabulary and intellectual capital necessary for deep understanding is not the only challenge that needs to be met in learning to read. There is no way to get to true literacy without first meeting the initial challenge of acquiring the skills of decoding (reading) and encoding (spelling). This booklet is concerned with describing what goes on during the processes of encoding and decoding, and why effortlessness in these processes is so important for effective reading and writing.

The methods described here are based on the work of many predecessors, including the great early reformer Maria Montessori; the reading specialists Marilyn Jager Adams, Nina Traub, and Dianne McGuinness; and the cognitive psychologist Steven Pinker. They are also based on my own experiences, both in my childhood and now as an adult teacher. As a child I was labeled as dyslexic. I spent ten years working one-on-one with a reading tutor. Learning to decode and encode was much more difficult for me than for many others and because of these difficulties, I have actively thought about decoding and encoding for the past twenty years. Now, as a teacher, my experiences in my own classroom continue to shape my ideas on how best to teach reading and writing.

Why It Is Hard for Some Children to Learn How to Read

Reading is not natural. This may strike many adults — especially those who have never taught young children to read — as an odd statement, since most literate adults read reflexively and apparently naturally, without any conscious thought. But the skills required to read and write are not hardwired into the human brain in the same way as the skills required to listen and talk. Humans have a language instinct, but it is an instinct for spoken, not written language. We need only reflect on how recent the invention of writing is in human history, and how many cultures have existed without writing, to recognize that humans are not equipped with a reading instinct. Since reading and writing

aren't natural skills, it isn't surprising that they are difficult for a significant percentage of children.

The basic task of reading is to take a written code and turn it into meaningful speech — in a three-stage process, from sight to sound to meaning. The beginning reader transforms the mute symbols on the page into sounds, then the sounds into words. Furthermore, these translations must be made quickly, because the span of human working (or “short-term”) memory is very short. If the process takes longer than a few seconds, some elements may drop out of working memory, never to be recovered.

But even when we translate sight to sound to words quickly, meaning is not secure, as isolated words do not have much staying power either. Short-term memory, which lasts only a few seconds in human beings, is a relentless taskmaster. The words need to be strung together into a meaningful phrase, since the phrase even more than the word is the basic unit of meaning. One phrase meshes with another phrase, then another, amounting to a complete thought or sentence. Our minds remember the idea in a kind of “mentalese” which is produced by the sounds of language but is not identical to those sounds. We can remember the sequence of ideas much more securely than we can remember exact words.

All reading teachers will affirm that some children attain the speed and effortlessness necessary for good reading with ease, but others do so with great difficulty. Difficulty in learning to read rarely derives from cognitive limitations, however. The children who struggle to learn to read are bright, and they are attending as well as they can. If we understand more about that struggle, we will be better able to teach all children effectively.

The chief determinant of how easily children will read is their ability to detect and isolate phonemes — those basic units of sound, different in each language, out of which words are built. Many children teach themselves how to detect phonemes. Some come to understand on their own that certain written letters work singly to represent a phoneme while other letters work in groups to do so, and that some letters can represent a variety of phonemes.

To gain this insight, children must first understand that their own speech is broken up into phonemes. A quick test of a child's grasp of this fact is the ability to speak and understand Pig Latin. (For any who have never tried this game, here is how you say “Pig Latin” in Pig Latin: “ig-pay atin-lay.”) In Pig Latin, the speaker must recognize and rearrange phonemes. One study showed that the ability to speak and understand Pig Latin correlated highly with successful decoding.

A second requirement for decoding is the ability to integrate different senses, especially sight and sound. In reading, we first distinguish a visual symbol (or letter) by sight, then connect that symbol with the sound it represents. That is, we translate one sensation, the visual, into another sensation, the aural. People's abilities to make this translation vary significantly.

An expression of such variation can be seen in people's ability to interpret the sounds of the touch-tone phone. Some people can, by just hearing the tones, tell you which numbers were pressed, while others (myself among them) cannot. The identification of touch-tone sounds is not an important skill, but if it were, most people could learn to make the sound-to-meaning translation effectively.

A third problem may underlie the challenges some children experience as they learn to read. Many have difficulty with sequencing, both visual and auditory. They do not easily process from left to right, so they have trouble going across the page accurately. These readers might pick up visual information about one word but apply it to another. They might focus on a symbol from a line above or a line below, or from the following word. It is obvious why this scanning/sequencing problem makes reading difficult. Auditory jumbling can occur as well, compounding the problem.

What makes the job of the early reading teacher so difficult is that many children have trouble on all three fronts: phonemic awareness, integration between senses, and left-to-right and other sequencing difficulties. I know, because I was such a child. I had to be taught the phonemic units in words deliberately. I still have difficulty translating some types of symbols from one physical sense to another. For example, I cannot easily understand a word when its spelling is stated verbally to me, and I cannot readily visualize a letter when I hear its name. Likewise I have difficulty with auditory and left-to-right sequencing. I consistently have trouble writing down a string of numbers, such as a telephone number. With this complex of problems, I gained reading skills only by being tutored from the second through the tenth grade. In those days it took that long — but now it does not have to.

New Advances

What insights have we as educators gained in the thirty-odd years since I was taught to read? There is indeed significant new knowledge, but it is compatible with things we have always known. In fact, teachers of the past developed methods of reading instruction that match our new scientific understanding pretty well, but their traditional methods can be fine-tuned by our new research-based understanding.

The National Institutes of Health considered reading failure to be of such significance that they instituted a panel to review the current literature. This effort highlighted the three methods that were consistently valuable in the teaching of reading:

Phonemic Awareness: Explicit instruction in listening to and analyzing the oral layer of language; using games and exercises to teach how speech is made up of words and words are made up of sounds.

Phonics: Explicit and systematic instruction in the sound/symbol correspondences of letters and letter groups, especially effective when directly linked to Phonemic Awareness.

Guided Reading: Instruction in which children take turns reading aloud to a teacher, who actively engages them, not only modeling strategies of decoding but also asking comprehension questions and using the text to build vocabulary.

Yet even when these three strategies of effective reading instruction are employed, some kids will need extra help. Our largest federal education program, Title I, gives all public schools the opportunity to provide this additional help to students. It is especially

important for kids in Title I programs to receive direct and efficient instruction using phonemic awareness and phonics for explicit lessons in decoding and encoding. It is also important that children receive some of that instruction in one-on-one lessons, to be sure that concentration and attention are at their best and that behavioral issues are minimized.

Aside from the general principles put forward by NIH, certain methods of instruction have been found to be highly effective. The following brief list is an outline of the methods that reading curricula and reading teachers would do best to follow.

We must teach incrementally, adding information and expecting further skills only when previously taught information is consistently utilized by the student.

We must teach clearly. We need to speak to students in ways that they understand. Students should be able to explain back what they have learned in their own words. They should be able to explain to a teacher what they know and how they know it.

We must teach consistently. We need to talk to students in ways that do not invalidate or contradict what we have previously taught.

We should become knowledgeable about our language, and we should encourage our students to think analytically about oral language, printed language, and their interrelationship.

We should come to know our children, treating each as an individual and using prior knowledge as the basis for new skills.

None of these musts and shoulds are new. They could easily have been written thirty years ago. Through the work of current reading specialists, though, we now know more about the process of reading and the linguistic structure of English. A turning point in my own teaching of reading came through two books: *Beginning to Read: Learning and Thinking about Print* by Marilyn Jager Adams and *Why Our Children Can't Read and What We Can Do About It* by Diane McGuinness.

My own school had used and still uses an excellent reading curriculum called *Recipe for Reading* by Nina Traub. A good offshoot of traditional Orton-Gillingham teaching that meets the criteria listed above, this curriculum lays out an excellent sequence for teaching reading. It is open enough to provide teacher ownership and flexible enough to accommodate individual student differences. At the time this curriculum was written, however, it was not as well understood why reading and writing should be taught in a particular way, or why reading and writing should be taught as two sides of the same coin, or why it was crucial to go step by step, from awareness and manipulation of sound, through instantaneous symbol/sound translation, to meaning. After reading Diane McGuinness and Marilyn Adams, I can use the Recipe for Reading curriculum much more effectively, modifying the program to my students' needs and abilities. I hope what I outline here will help others do the same with their reading programs.

Marilyn Adams' book represents a driving force behind the renewed emphasis on the direct teaching of sound/symbol relationships. Codifying current reading research, she provides a good explanation of what goes on in our minds when we read. Diane McGuinness' book, which analyzes the written code of English and offers an excellent history of the development of writing, has not been as influential as it should be. McGuinness states that she has developed a radically new system of teaching reading and casts aspersions on other methods. In fact, though, her work represents not a radical break from the past but an important modification of traditional phonics-based instruction. Even more important, she provides cogent and clear explanations of why it is important to teach reading from sound to print rather than print to sound. She lays out a simple framework and rationale for teaching reading, adaptable to many curricula.

The heart of McGuinness' argument is that spoken language came before written language and that writing is in fact an imperfect transcription of speech. She points out that most cultures did not develop writing, and that the acts of writing and reading are not natural or innate. She suggests refinements on traditional methods of reading instruction by giving children only controlled texts to read. She insightfully divides English into the basic code — the most common spelling for English phonemes — and the advanced code — containing most of the possible spellings for English phonemes. McGuinness believes that students should be explicitly taught the basic code and should master it before being explicitly taught the advanced code.

This staging procedure, from basic to advanced code, is an example of an analytical and incremental approach that imparts proficiency at a foundational task before proceeding to the next stage. We teachers need to think analytically about reading and writing, and we need to use this knowledge when explaining reading and writing and assigning work to our students. Just like adults, beginning readers perform better if they understand the purpose of the strategy they are pursuing. An analytical approach helps children in all three important areas of reading development: recognizing phonemes, succeeding at sensory translations, and sequencing. When these large problems are broken up into manageable tasks, they become procedures that can be mastered and made automatic. When researchers speak of “automaticity” and “sub-attentional” processes in reading, they mean that children need to recognize phonemes, make sight/sound translations, and perceive sequences rapidly, without even thinking about the tasks.

The Need for Speed

Good readers translate the visual symbol to sound instantly and sub-attentionally, attending to what is meant by those symbols on the page before they drop out of short-term memory. The limits of working memory are such that when children have to actively decode — when they have to think about sight-sound translations — they cannot actively interpret meaning. Because most of us cannot pay active attention to both sound and meaning, some people have felt that active decoding gets in the way of understanding for an early reader.

It is true that active decoding gets in the way of interpretation, but sub-attentional decoding does not. Paradoxically, in order for children to gain the proficiency that allows them to attend to meaning without consciously attending to sound, they need to be taught

to attend to sound. Initial emphasis on sound is not an end in itself: it is merely the best and fastest way to get to meaning. Eye movement studies have shown that advanced readers actually scan and focus on nearly every word and word part. In effect, they are decoding sounds, but they are doing it so easily that it slips below their conscious attention. The same studies show that poor readers are not as systematic. The best way to teach active interpretation and comprehension is to teach decoding so well that it becomes sub-attentional.

When children cannot make the sight/sound translations instantly and automatically, the teacher should keep teaching symbol/sound relationships in the simplest and most direct ways until those relationships become automatic. One such way to teach each symbol/ sound relationship in isolation is by using cards with only one symbol on each card. Because the symbol/sound relationship is an essential building block in learning to read, it is crucial that the initial emphasis be put on teaching that relationship. It is better to spend time teaching each symbol/sound relationship, not whole words. This principle has been understood for a long time and is the basis of the reading instruction theories of both Maria Montessori and the Orton-Gillingham approach. Explicitly teaching the English code, in all its complexity, works better than trying to teach whole words. There are too many whole words for anyone to successfully learn them all, and a whole-word approach does not teach children the analytical tools necessary to spell as well as to read.

But children must not be satisfied with simply sounding out the words. Because of the transience of sensory information, made permanent only by becoming meaningful, every child should be taught to be on the lookout for meaning from the beginning. An early reader needs to go back and reread the text until he or she can read with the smoothness that is necessary for understanding. Many children do instinctively go back and reread text when they have to work at decoding a word. They are reading for meaning from the start. In my experience as a teacher, these are the children who will read easily. They understand that the printed text is a running transcription of sounds in their own language. They are the ones who easily and fluidly make the vowel shifts and recognize other features of decoding that must be taught explicitly to other less natural readers.

We need a step-by-step, explicit teaching approach because the multiple steps of reading make the process of reading intrinsically difficult. The reader must correctly interpret visual symbols, and correctly connect those symbols with sounds. Because of the limits of working memory, the reader must make this translation quickly, accessing the sound of each word, word after word, rapidly putting them into phrases, then grasping phrase after phrase in order to understand what they are reading. In effective reading, we turn printed images into sounds inside our minds, doing it so quickly and easily that we can attend to what the writing means. Speed and effortlessness are the keys to reading well.

Applying The New Insights In The Classroom

Reading materials are very expensive, and classroom teachers often cannot wait for better, more integrated, research-based curriculums to arrive in their schools. They

need to use available resources in the best and most effective ways possible. One of the most important ways they can do this is to become analytical about the English spelling system, recognizing how it encodes sound, keeping aware that the oral language is primary and that written language is a transcription of that oral language. When teachers understand that writing is an imperfect but systematic transcription of speech, they can use most of the existing reading curriculums to teach reading and writing effectively.

Gaining linguistic insight is enormously rewarding for the teacher, making the teaching of reading more interesting. By bringing an analytical approach to a child's reading and spelling, a teacher can gain access to how the child is perceiving spoken and written language and then can help the child perceive the language more accurately. When a child reads the word "chip" as "jip," the teacher who is aware of the structures of our language and can say, "You are close — /ch/ and /j/ are brother and sister sounds." He or she can say this because of the linguistic knowledge that the sounds /j/ and /ch/ are voiced and unvoiced versions of very similar consonant sounds, made with the same mouth movement.

Speech and Language Specialists have had that kind of information all along, but it is rare for a classroom teacher to know about speech sounds in such detail. Yet it is unfair to the child who makes this type of reading mistake (a very common type of mistake) not to have a teacher who understands what the child is doing. If the child's error is pointed out and explained, and the child works on training his/her senses so that he/she can be aware of these subtleties, the mistakes disappear more quickly. If, on the other hand, the teacher simply says, "You are close. The word is "chip," there is a good chance the child will not even remember the help except to remember that he was wrong.

But what about the children who have no difficulties? Won't they be bored? Won't this amount of linguistic detail inhibit the growth of the sixty or seventy percent of the students who are going to read well anyway? In my experience, what this more careful analysis of language does is allow advantaged children to write better, spell better, and become budding little linguists. The whole class gets involved in opening the locks of our language.

Even so, the teaching of reading is complicated by the astounding variety of rates at which children learn to read. A teacher needs to keep every child in a class motivated and moving forward with the belief that each will eventually learn to read well. Hence the teaching of reading is difficult, even when a teacher follows good research-based practices. The teaching of reading requires both science and art.

The art is much harder to describe. It cannot be taught through words on a piece of paper. One important aspect of the art of teaching reading, though, is an empathetic approach. The teacher needs to be able to put him or herself in the position of the non-literate child — in effect, to go back to hearing the spoken language without the influence of print, so that seemingly irrational mistakes (like a second grader spelling the word "much" as "muge") are understandable.

Let's look at that mistake in detail. Spelling "much" as "muge," the child has accurately heard that the word has three phonemes and has only misunderstood the last phoneme. Believing it to be /ch/'s sibling sound, /j/, she has spelled it "-ge." Her error really is small linguistically, but that might not be obvious to a new teacher. When the teacher understands why a student makes such a mistake and directly teaches to the misunderstanding, it is much easier for both the adult and the child. It turns out that

knowing more about our language and the process through which children learn to read makes it easier for the teacher to be empathetic. It turns out, in other words, that a clear understanding of the science helps the art.

In the sections that follow I will summarize the science most directly useful to the art of being a good reading teacher.

The Alphabetic Principle: Why English Is Written the Way It Is

We as teachers need to understand that all languages are combinational systems that use the finite building materials of phonemes to build a potentially infinite number of words and sentences. We are still in the debt of those old Phoenicians who first realized that their language was composed of a few ultimate phonemes that could be coded into a few symbols — in other words, into an alphabet. The basis of our written English is just such an alphabetic code.

In an alphabetic writing system, visual symbols represent the individual phonemes. In English, we have about forty-three different phonemes, yet we have only twenty-six different letters. The difficulty of having a greater number of sounds than letters is solved in English by pairing or grouping letters together to represent many of the forty-three sounds. In English, the relationship between a phoneme and its symbol can be quite complex. I will describe and chart the details of that relationship later on.

In spoken language, the syllable — not the phoneme or word — is the basic unit. When we talk, there is little difference in the breaks we take between syllables and the breaks we take between words. We pause when we come to the end of a phrase, but not between every word. It can also be very hard to hear the underlying phonemes within a syllable. In speech phonemes blend together, and that blending influences sound. Another reason it is hard to hear phonemes is that, as isolated units, they have little or nothing to do with meaning. For instance, /e/ does not mean happy or mammal — it is simply a sound. Throughout a child's prereading language experiences, the child has been listening to language for the most part to gather meaning, not to isolate phonemes. Most of our kids come to school able to speak most English phonemes. Most can use phonemes but can't separate them, phoneme from phoneme.

Languages throughout history have used different types of writing systems. Writing systems are to some degree the products of tradition, but they also reflect the reality of language sounds. Some languages, such as Hebrew, have syllables with very regular vowel patterns, so they can be written using only consonants. Other languages, such as Japanese, have only consonant-vowel syllables and can be written with symbols that represent the syllables. English (along with many other languages) has sound structures that are so complex and varied that only an alphabetic symbol-system can represent the full range of the language's sound combinations.

In English some syllables, for example, are composed of a single vowel sound, such as the first and last syllables in the word "idea." Other syllables combine a consonant and a vowel sound, such as the middle syllable in the word "idea." Other syllables contain consonant plus vowel plus consonant sounds. For example, the word "plants" contains six distinct phonemic sounds, combining in one syllable. These

examples show just a few of the many types of syllables spoken in English. Because the sounds are complex, they need to be represented with an alphabet, the most flexible transcribing code possible.

On their own, many children will never figure out the exact nature of that code. I recall that as a student, I was taught only a portion of the English code, and I never truly understood that it was a code! After my first year of teaching in a K-1 classroom, I went to a short Wilson Reading Training Course. One of the things I learned was that the sound /er/ had multiple spellings. I had never before considered that the word “her” consisted of two sounds: /h/ and /er/. I had been successfully reading and writing the word “her” for twenty-five-plus years, but I had never been conscious of the sound /er/ or its multiple spellings. I did not realize that the words “fur,” “bird,” “learn,” and “her” all contained the same sound, /er/, spelled in different ways. I had heard and read the sound /er/ millions of times, but I had never figured out this linguistic description of it. It was a revelation to me. English actually made sense. I had been under the faulty impression that reading and writing were two entirely independent skills. I thought I had to memorize every word as a unit rather than learn the forty-three English phonemes and their spelling variations. In other words, I was never taught, nor did I figure out, that in English we use the alphabetic principle to encode speech and that phonemes are represented as pairs or groups of letters.

I was not alone. Many of our children are never taught and never figure out that speech sounds are represented in print by letters or letter groups. These children are not taught the direct relationship between letters and sound. It is a complex relationship, complicated by the multiple sources of the English language and by the meaning-based nature of much of English spelling, but it is a direct and primary relationship. When teachers and students understand this alphabetic principle, English reading and writing become understandable — easier to learn and easier to teach. It is vital that both teacher and student believe that English makes sense. If we as teachers know and understand the alphabetic nature and the particularities of the English language code, we can explain and teach it so that nearly every student can succeed.

Granted, even when children are taught well, some will still need one-on-one instruction. Some may have poor auditory processing abilities or difficulty with visual symbols. They need to be taught in the quiet of a small group or in a one-on-one situation to gain the knowledge and skills required to read well. That one-on-one instruction should be given early in a student’s elementary career. In my own experience, it can often be completed with just one hour of instruction per week for a single school year.

The first step teachers should take is to become aware themselves of the phonemes of English. We as adults have been so influenced by print that we are not aware, for example, that “moon” and “true” contain the same vowel sound. Print has so powerfully influenced our impression of those words that we do not hear them clearly. By putting ourselves back in the position of really hearing our own language, it will be easier to respond, when a child writes “troo,” that he has heard the word correctly but that in the word “true” we spell the phoneme /oo/ with the letters “ue.”

We must always try to reinforce the alphabetic principle: the sounds of the language are represented one at a time as symbols on the page. Children’s errors in both reading and writing offer valuable insights into how they are hearing spoken language and perceiving visual symbols. These are important instructional moments for the

teacher. They should be corrected for the sake of the child's learning, not to achieve some norm or standard of correctness. In other words, point out an error, explain why it is an error, and put that error into a context that invites the child to believe in the rationality of the English language.

One early lesson we should convey is that in many words, the number of sounds does not equal the number of letters. For example, "ship" has three sounds (or phonemes) but four letters. We as teachers should understand how phonemes make up words in English, represented in print by letters or letter groups, and how a single phoneme can be spelled in a variety of ways.

When I talk to children, though, I use the word "sound," in many ways a better word than "phoneme." "Sound" does not sound as scientific or technical, which makes it easier to acknowledge the somewhat arbitrary nature of what we teach in reading. For example, children learn the word "her" more easily as two units of sound — /h/ and /er/ — rather than as three units of sound — /h/ /u/ /r/ or /h/ /ə/ /r/ — as dictionaries and people with exceptional ears analyze the word. My ear is not good enough to tell if the dictionaries are right, but I know that dividing "her" into three phonemes is too difficult for many children and for many adults.¹

Decisions about what units of sound to teach will never be perfect, but they should be guided by the aim to teach the units of sound that are easiest for children to hear. More important than dictionary pronunciation guides are the actual spellings of the sounds as written in standard English. Below, I provide charts of the most common spellings of English sounds. Some of these sounds contain more than one phoneme (such as the long /u/ in "union") but since that sound has three common spellings ("u," "ue," and "u_e,"), it is better not to confuse a learning reader by breaking it down into its actual phonemes (/y/+oo/).

Phonemic Awareness

Study after study show that teaching phonemic awareness is effective in improving children's reading. Teaching phonemic awareness means teaching children to become conscious of the actual sounds of the language. It can be done through a series of games. These games should first occur orally, with no reference to print, to develop children's auditory processing skills and attention spans.

There are four basic skills to be learned here; first, the ability to hear that speech is made up of individual words. For many young children this is not obvious, and learning to hear words is an important step in learning to read. Children should be able to hear discrete words auditorily as well as recognize them visually. They are becoming conscious of words as bits of sound that contain meaning. They are learning to become analytical about spoken language.

¹ The word "her" is a good example of a word represented by different phonemes in different spoken dialects. In some southern regions of the United States, it is spoken as /h/ /ə/ (an aspirated /h/ plus a schwa) — definitely just two phonemes. The teacher needs to be sensitive to the real phonemic differences in the language that a child brings to class in the speech patterns that he or she uses and is used to hearing.

The three other important aural analytical skills involve the phoneme. The first is to discern the difference between different phonemes — to be able to hear, for example, that /i/ is different from /e/. Some distinct phonemes sound so similar, the untrained ear has difficulty differentiating them. Learning how to differentiate between phonemes and accurately reproduce them makes the process more concrete for children. When teaching this skill, the teacher should use letters and letter groups representing single phonemes, written on individual cards. One of the reasons many adults are so print-centered is that it is easier to differentiate printed shapes (letters) than sounds (phonemes). By directly teaching phonemes, and by connecting them with their visual symbols, we make these abstractions more concrete and easier to learn.

The third skill is blending, which should be taught purely auditorily. A child listens to a string of sounds — /c/ /a/ /t/ — and turns them into the word “cat.” Blending is a form of reading. In my class, the children love doing it. I do it often enough so that they are soon able to string together entire sentences worth of sounds into meaningful speech. The process becomes automatic, and they begin to chunk information, not just hearing the sounds but also hearing how the sounds make up words.

Soon the kindergartners are giving me sounds to turn into words, intuitively predicting the next skill they must develop: segmenting. This final stage of phonemic awareness is comparable to writing. Here, for example, the teacher might ask for the student to make the sounds in the word “pay,” hoping to hear the student say /p+/ai/ as two distinct sounds.

Phonemic awareness allows the child to develop the skills of reading and writing in their simplest forms. It is not dependent on the child’s memory for letter/sound relationships. Most phonemic awareness curriculums include phoneme manipulation (for instance, “Say “frog” without the /r/”) — a lot of fun for kids who are naturally good with phonemes. By increasing the awareness of sounds within words, these games are useful but they are not mirror images of reading or writing. Therefore, they are less important than simply blending and segmenting. Blending and segmenting, simplified versions of reading and writing, have proven to be the most effective use of my class or tutoring time.

When doing these exercises, it is important that the teacher and the children produce the phonemes as separate, unblended units of sound. Both teacher and child need to pronounce each sound individually and purely. It takes a great deal of practice to be able to pronounce the consonants without putting an /ə/ (a schwa) at the end of each consonant. In fact, many people claim it is impossible — but is possible to pronounce consonants purely enough that the schwa does not interfere with the task of blending and segmenting.

It is also important not to blend sounds in a word but to utter them one at a time. The blending should be done in the mind, not in the mouth. Blending in the mouth distorts the phonemes and does not reinforce the learning of phonemes as individual units. This method of pronouncing each phoneme as short individual bit of sound is different from the way that many teachers have traditionally taught blending, often called “sounding out.” In the traditional method, sounds are stretched and melded together. This stretching and melding increases individual phoneme distortion and does not clarify the sound-symbol relationship of single phonemes to letters or letter groups. It also lengthens the time that it takes to “sound out” a word, putting a greater strain on time-sensitive

short-term memory. When each phoneme is uttered as a distinct staccato burst of sound, however, the phoneme stays purer and symbol-sound correspondence is reinforced, making the process faster and, in my experience, much more effective. Since everyone has a limit to how much he or she can learn, we need to teach the essential information and teach it very well. We need to teach the sounds used by writers as the building blocks of English. Children must learn to handle these building materials actively, daily, developing a strong sense of phonemic awareness.

Two critical skills for reading are developed at this stage. First, children become aware of English phonemes and gain the ability to reproduce them accurately. Second, children learn how to focus and pay attention to the sounds of language for a long time. Children vary tremendously in their abilities to remember sounds, but even for a large group, a teacher can tailor these games to each child's needs. They stretch a child's attention and sharpen her memory for sounds. Many five-year-olds can only remember and blend two sounds. If the teacher offers three sounds and asks for them to be blended into a word, the first sound drops out in their responses. The teacher might say /sh/ /aw/ /n/ and the student would say "awn," even when her own brother was named Sean. To tailor the game to that child's need, give her only two-sound words, until she is more fluent.

The teacher should begin by trying words made of a consonant plus a vowel, like /d/ /ai/ or /sh/ /ee/. With practice, children get the hang of chunking auditory information. Soon they are blending longer and longer words, then building sentences. Most English syllables are only three sounds long, so the ability to chunk three sounds into one syllable is crucial for effective decoding. When students can chunk three bits of information together and transform them into one bit of information, they are well on their way to being able to decode even very long multisyllabic words.

In sum, by building students' phonemic awareness, you are training kids in the basic task of decoding and encoding. It is not at all surprising that scientific studies of children who have been trained in phonemic awareness show this approach to be stunningly successful. In the realm of learning to read and write, building phonemic awareness essentially helps children walk before they are asked to run.

Vowels and Consonants

The best math instruction aims to teach children the concept along with the procedure. As math teachers have understood for some time, children who can follow mathematical procedures and also understand the underlying concept behind the procedures are better at math than those who just learn the procedures. It turns out to be much the same in the teaching of reading.

First the child must understand the concept that the English writing system is a left-to-right visual mapping of a temporal sequence of sound. Next children need to understand that there are two general types of speech sounds, vowels and consonants, and that they function differently. (It is important to note that when I use the terms "vowels" and "consonants" throughout this booklet, I am referring to speech sounds and not to letters.) Even as an adult, I did not notice or appreciate the significance of vowels and consonants, but I have come to know, by talking to more natural readers than I, that they

have long been aware of the radical differences between these two types of speech sound. It is important to teach these differences explicitly to all of our students.

Teachers should start with vowels. They are easy to hear. Many syllables in English are simply vowels, and so kids have already had a lot of practice hearing them. Some children may at first have trouble distinguishing between different vowels that sound similar, but most can hear and understand what vowels are in general. They are the speech sound we emphasize when we sing. To make that point more clearly, I typically sing “Happy Birthday” all in vowels: /a/ /ee/ /er/ /ai/ /oo/ /oo/. (Note that the r-controlled vowel functions as a vowel). Soon the kids get the idea and are singing only in vowels, too.

Consonants are harder to hear. The American Heritage Illustrated Encyclopedic Dictionary’s definition helps explain why.

consonant: a speech sound produced by a partial or complete obstruction of the air stream by any of various constrictions of the speech organs. Derivation — Middle English from Old French, from Latin (*littera*) *consonans* (stem: *consonant-*), letter sounded with a vowel, from the present participle of *consonare*, to sound at the same time.

As can be seen from the dictionary entry, consonants are usually co-articulated. That is to say, they are “sounded with” (*con-sonare*) a vowel or another consonant, making it difficult to isolate consonants from vowels in speech. For some children, it is even more difficult to separate consonant from consonant. But children who have had early instruction in phonemic awareness will be used to conscious practice with speech sounds, so that the idea that consonant blends can be analyzed into separate consonants will come more easily to them. Be explicit with these children, clearly articulating these sounds as separate units.

When we introduce children to the visual symbols for sounds (letters), it is important to distinguish vowels visually from consonants. I do this on the individual sound/symbol cards by drawing vowels in red and consonants in black. This is not a new idea — Maria Montessori did something similar a hundred years ago, and Nina Traub recommends this in *Recipe for Reading*. The two colors show children right from the start that there are two distinct types of letters that represent two types of sounds.

Some programs give rules about vowels and consonants right away, but part of the art of teaching is telling kids only the amount of information they need for the moment, so that they learn the basics soundly before being introduced to subtleties. The teacher should avoid reciting rules that he or she will ultimately have to concede work in some but not all cases. In learning to read, there is a time and place for rules, but that comes later -- and almost exclusively in relation to consonants, which are rule-based, and not to vowels, which often are not.

The Basic Code

One of the important contributions of McGuinness’ book, *Why Our Children Can’t Read and What We Can do About It*, is the idea that English can be divided into the

basic code and the advanced code, and that children should become automatic readers of the basic code before they are given uncontrolled text, full of advanced-code language, for independent reading.

According to McGuinness, the basic code consists of the traditional short vowel sounds and the most common spellings of consonant sounds, including the digraphs. Below I give a list of the sounds and spellings that make up the basic code, with suggestions on how best to teach it. Exact instruction methods are best left up to individual teachers, but one rule of thumb applies to all: only controlled text, containing material that has already been taught, should be given to students for independent reading. Novice readers need to gain the confidence that English makes sense and is a rational system. Dividing the code into two sections, basic and advanced, and allowing the students to master the simpler part first makes teaching and learning much easier and more secure. Some students will master the basic code while still in Kindergarten, others not until the beginning of second grade. But we as teachers need to let children master simple material before we give them complex material. The teaching of reading, like the teaching of math, is most effectively done when we follow a clear and cumulative sequence.

Short Vowels and Teaching Methods

sound	example
/i/	knit
/e/	net
/a/	Nat
/u/	nut
/o/	not

It is important to teach the traditional vowels in the correct order. Some of the short vowels are quite similar to each other, both in sound and in mouth formation. To keep the children from becoming confused, the sequence of instruction becomes significant. Just as in teaching shapes, it is best to introduce the oval only after a child clearly understands the rectangle and the circle, so it is best to introduce /e/ and /u/ only after a child can clearly hear and produce /i/, /a/, and /o/. It is best to start with /a/ and /o/ together, so that the student begins to differentiate between vowel sounds. Once the child has learned /a/ and /o/, the teacher should introduce /i/. Only after the child has shown mastery of /i/, /a/, and /o/ should the teacher introduce /e/ and /u/. These two sounds fall in among the other three sounds phonetically. The five short vowels should always be visually presented left to right, /i/ /e/ /a/ /u/ /o/, mirroring the procession of vowels from the mouth most closed to the mouth most open.

When learning these vowel spellings, the student should be taught to attend to the shape of the letters representing them. The letter shapes are helpful because they match the shape of the mouth when sounding each vowel. The letter “i” is the narrowest letter, and when making the sound, the mouth is quite narrow. The letter “e” can be thought of as a smile, and when making the sound, the speaker forms a kind of smile at the back of the throat. The letter “u” has an open top, and the child can match this shape with forward and outward force of the mouth when making the sound. The letter “o” is the most clearly shaped in the same way that the mouth is shaped when making the sound. These clues are in front of the child every time he or she sees the letters.

These comments help show why the teacher should always lay out the letters in the same physical order — /i/, /e/, /a/, /u/, /o/ — so students gain a physical understanding and feel the sequence of letters. This practice will make it much easier to teach the /e/ and the /u/, two sounds many children have difficulty discriminating. We employ both positional memory (the sequence of mouth shapes from closed to open, corresponding to the left-to-right sequence of letters) and logic (the correlation of the shape of the mouth to the shape of the letter) to help them distinguish sounds.

The traditional way to help children remember and discriminate between speech sounds is the key-word method, in which a single example is always paired with a sound to be learned: A apple /a/, A apple /a/, A apple /a/. It is of course easier for a child to remember a word than a sound, particularly when there is an accompanying picture. It is also much easier for a child to hear the difference between “hut” and “hot” than to hear the difference between /u/ and /o/. Key words do indeed help children remember and distinguish sounds in isolation, and knowing sounds in isolation is a necessary precondition for reading.

The key-word method is effective for helping children remember individual symbols, but when kids apply it as a reading strategy, it often turns out to be ineffective, requiring children to remember too much information. For example, when a child sees the symbol for /o/ in the word “cop” and arrives at the /o/ sound through the word “hot,” the extra time spent retrieving the information and separating the vowel from the key word can degrade the reading process. Working memory is limited for us all, and kids with reading difficulty tend to have less working memory space for sounds than others do. Any extra steps will degrade the process of reading. For successful reading, the translation to sound must be instantaneous. Many kids need help developing accurate retrieval techniques, but as teachers we need to be aware of working memory’s limitations, so the techniques we teach do not interfere with the speed necessary for reading for meaning. If the strategies we teach children are non-linguistic or fluid enough so that only the crucial piece of information is remembered, children will read more easily. All this tells against the key-word method.

That said, there are some significant advantages in teaching children to associate letters with labels and with words that contain its most common sound, such as A: apple /a/. It has been found that labeling objects helps people recognize their distinguishing features. The process of naming can help us pay attention. People who can name a fir and know how it is different from a spruce are looking at the trees more carefully than if they lack these labels. Studies have shown a correlation between Kindergartners’ future reading performance and their ability to recite the alphabet and recognize letters, so it is

possible that learning labels for letters helps children distinguish between letters, an important step in learning to read.

But it's unclear whether children who come to school reciting and identifying the letters of the alphabet are naturally better at visual discrimination and sensory integration, or whether they are better at reading because they already learned the alphabet. Moreover, the correlation between Kindergartners' letter identification and future reading success does not prove that it's a good idea to teach the alphabet at the same time that you are teaching reading. Marilyn Adams suggests, in *Beginning to Read*, that children should learn the alphabet long before they begin to read. Almost all of us who teach reading have seen the letter name actually cause interference for a beginning reader. For even able young readers, letter names can cause difficulty with spelling.

So what should the teacher do when children come to Kindergarten not knowing their letters? It is my belief that it is best to concentrate on teaching the sound/symbol relationship directly without relying on the letter names. The learning of the visual symbol should be reinforced kinesthetically, through handwriting, and taught directly in association with the symbol's primary sound. The sound/symbol relationship is the most important element in the process of learning to read and write, and so it should be the focus of introductory reading lessons. For the children who have the most difficulty integrating the sound automatically with the symbol, it is important for us to clear the pathway from sound to symbol and symbol to sound. If, from the very start, we get children used to traveling both ways (sound-to-symbol = writing, symbol-to-sound = reading), we can accelerate the automaticity needed for mature reading and writing.

These ideas are far from original. They follow Maria Montessori's lead. She believed that much of education was sense training. When you teach children to read and write, you are training them to produce and to hear subtle but essential gradations of tone — the difference, for example, between “rad” and “red.” When a child can hear and produce these subtle gradations as isolated units, he or she has developed a sense of those important building blocks of language: phonemes.

We know that phonemes are hard to hear and produce in isolation. We also know that these small units of sound have no concrete or stable meaning. The sound /b/ does not mean bad or beautiful; it just means the sound /b/. Words are the building materials of meaning, but phonemes are the building materials of words. There is no longer any doubt that we need to teach these abstractions (phonemes) to small children. But how?

Here again, Maria Montessori is a model. About a hundred years ago, she popularized the idea of teaching incrementally. For example, she would first show a child objects of two colors, pointing to each and telling the child “This is red” and “This is green.” She would then ask the child to show the red object and the green object. Only after the child consistently responded correctly would she ask the child, “What color is this?” Later studies have consistently confirmed that this technique of learning by small increments to the point of error-free performance is far more effective in teaching complex skills than a more integrated, holistic approach.

The technique of limiting and controlling what we teach is very effective in teaching sound/symbol relationships. Lay out only a few letter cards or draw only a few letters on the board. Show the children first which symbol represents which sound. Then ask them to find the symbol that represents that sound. Only after they have repeated success is it time to ask them to produce the sound. This incremental method cuts down

on the percentage of errors. Limiting errors is important, because once confusion sets in, it is often difficult to remove. Maria Montessori understood that error-free practice allows children to make steady progress. Our goal as reading teachers is to provide our students with interesting, motivating, error-free practice which is incrementally challenging. Each teacher will find his or her own variant for each classroom, but we must all understand the incremental steps and the order in which to teach them, so that all children learn to read well.

Voiced and Unvoiced Consonant Pairs

pairs		examples			
voiced	unvoiced	voiced	example	unvoiced	example
/d/	/t/	/d/	dot	/t/	tot
/b/	/p/	/b/	bit	/p/	pit
/g/	/c/	/g/	got	/c/	cot
/z/	/s/	/z/	is	/s/	sit
/v/	/f/	/v/	give	/f/	gift
/j/	/ch/*	/j/	jump	/ch/	chump
/th/*	/th/* /th/		this	/th/	thin
/zh/*	/sh/* /zh/		vision	/sh/	ship

Many of the mistakes that new readers make revolve around voiced and unvoiced consonants. Voiced and unvoiced consonants are made with similar mouth embrasure, but the voiced consonants engage the vocal cords and the unvoiced do not. Dianne McGuinness advises reading teachers to feel and see this by standing in front of a mirror and saying any of these pairs of consonants with the hand on the throat. The voiced consonants buzz and the unvoiced consonants do not, but the shape of the mouth is nearly identical in each pair.

Voiced and unvoiced consonant sounds are hard to discriminate. Spelling patterns are one of the main ways that we as literate adults notice these differences. Think of the words “this” and “thin.” These words, with identical spellings for the first phoneme, actually contain two different phonemes: a voiced /th/ in “this” and an unvoiced /th/ in “thin.” Spelling does not reflect these different phonemes, and most of us do not think about their differences because they are not important for either reading or writing. Far

* The letter pairs that represent a single consonant sound, called digraphs, should be introduced only after the child has a firm grasp of the one-sound-to-one-letter relationship central to the basic code. Since the distinction between the voiced and unvoiced /th/ influences neither meaning nor spelling, it does not need to be taught specifically. Since the /zh/ is quite rare, it need not be taught in distinction from /sh/. It is included here only to give the reader the complete set of eight voiced and unvoiced consonant pairs.

different is the case with /p/ and /b/ or with /t/ and /d/, two other pairs of voiced and unvoiced consonants which are equally hard for children to hear and are actually spelled differently.

It is only because of differences in spelling that most adults noticed the subtleties of voiced and unvoiced consonants. Without such experience with print, children neither perceive or produce these subtle differences easily. In oral language they understand and make themselves understood by using context to generate a correct interpretation of what is being said. It is crucial for teachers to understand why children make these particular consonant errors while reading so that the teacher can help the child hear and feel these differences, not only when reading but also when speaking and listening. With this awareness, most children learn to overcome the difficulties of distinguishing voiced and unvoiced consonants.

Just as it was important not to introduce all of the vowel sounds at the same time, it is likewise important not to introduce too many of these consonant pairs at once. It is also a good idea to introduce /p/ + /b/ only after the student is confident in using /d/ + /t/. Delaying the introduction of /p/ + /b/ helps avoid some of the confusion over the writing of “d” and “b,” but it does not always work perfectly. Again, it is not a good idea to introduce key words as a mnemonic device. Instead of key words, offer key gestures or use linguistic examples, with different examples given each time, so the child remembers the sound and not the example. I have often seen children recite a whole key-word phrase to get to a single phoneme, causing a delay that makes reading more difficult. If we alter the linguistic clues we give or, better yet, give non-verbal clues, we free up space in working memory so that children can read more quickly and therefore more easily. We do not want a whole example to be stuck to a particular symbol — just the phoneme or phonemes.

It is also important to control the mixture of vowels and consonants that a child is learning. *Recipe for Reading* introduces /a/ /o/ /c/ /g/ /d/ /t/ /l/ /m/ and /h / first. In this curriculum, the children study these nine symbol/sound correspondences, then they begin to read simple text, which gives them an intrinsic reward for their hard work.

Controlled text for independent reading makes a tremendous difference. We should only ask children to decode what we have already taught them. Introducing complexity at an early stage can lead to faulty reading strategies that take a concerted effort to correct. Here again, Maria Montessori’s error-free practice is an important model.

Nasal Consonants

sound		example
/m/	Least nasal	mill
/n/		not
/ng/	Most nasal	young

The sound /ng/ is best taught after the children have mastered the phonemes represented by single letters. These three phonemes should be taught as a group, going from the least nasal /m/ to the most nasal /ng/. To accompany these sounds, I use gestures. I rub my stomach for /m/; I touch my nose for /n/; and I scrunch up my nose for /ng/.

Vowel-Like Consonants

sound	example
/l/	log
/r/	ring

The consonants /l/ and /r/ function more independently than the other consonants. The sound /l/ can easily be made without the addition of a vowel sound and its pronunciation can be stretched out like a vowel's pronunciation. In some dictionaries' pronunciation guides, the /l/ is given its own syllable without any accompanying vowel sound, such as in the pronunciation of "apple" or "ladle." The unaccompanied symbol "r" can function as a vowel after a long vowel or diphthong, such as in the words "fire" and "our." Both of these sound are difficult to pronounce for people who grew up speaking Asiatic Languages.

One Letter, Two sounds

One letter, two sounds	
/ks/ written as x	Fox

Digraphs

sound	example
/th/	they
/th/	think
/sh/	ship
/ch/	chin
/wh/	when
/ck/	kick
/ng/	song
/qu ²	queen

In a digraph, two letters together make only one sound or phoneme. A digraph is a convention of spelling, not of speech. When introducing digraphs, it is very important that the teacher understand that they are not combinations of phonemes, sometimes called “blends.” For instance, “ch” and “sh” are digraphs representing single phonemes, whereas “gr” and “nts” are blends made of multiple phonemes. In a blend, two or three letters represent two or three separate sounds combined together. In my experience, it is not necessary to teach blends as a special category, but it is a mistake to ask students to decode text with blends before they are proficient at reading simpler text.

Many children have trouble with blends even after they have demonstrated proficiency with simple text, but it is best to tackle those difficulties by going back to phonemic awareness and working aurally and orally on both blending and segmenting. Short oral phonemic awareness lessons will help. Children who have difficulty with blends also often need practice with articulation and diction. They have spent many years not saying or hearing words clearly. Many have formed incorrect impressions of the sounds of words that contain blends. Phonemic awareness exercises can clarify those impressions, so that almost all students will master blends.

² The letters “qu” are not a true digraph, as the combination represents two distinct sounds, /k/ /w/, co-articulated. I teach “qu” to children when I am teaching the digraphs because it is not a blend in the traditional sense — in other words, it is not a pair of letters one can sound out. The reader needs to memorize the symbol/sound relationship for this letter pair as for the true digraphs.

For those students needing some basic review, sound-by-sound instruction, which is the basis of phonemic awareness, is crucial. Teaching children how to pronounce words accurately will help their reading and writing. In earlier days, instruction in standard pronunciation (“orthoepy”) was normal practice, but it was often vitiated by the false implication that the child’s home dialect was inferior or incorrect. To avoid that confusion, instruction in pronunciation has recently been frowned upon entirely in some quarters. Certainly, the teacher should not make value judgments about dialectal forms, but it is important for the teacher to convey that standard spelling is roughly based on standard pronunciation, and that it is in the child’s interest to know and use standard dialect sounds, reflected in standard spelling.

In general, it is much better to slow children down and train their perceptive abilities in all aspects of speech before proceeding to aspects of the writing system that depend on those perceptive abilities. For instance, it is best to train them to hear the phonemes /t/ /r/ /a/ /k/ in “track,” so they can apply what they have already learned about single consonants to this more difficult but not radically different task of reading blends. It is not efficient or wise to study a separate new sound called “tr,” given the large number of such blends. Studying blends takes time away from studying digraphs. After all, students can sound out blends but they can not sound out digraphs.

With digraphs, which represent basic phonemes, young readers must become totally automatic. They should become as comfortable with them as they are with single-letter consonant symbols. Digraphs, like the short vowels and the single-letter consonant sounds, should be introduced a few at a time. Say each sound, one at a time, while showing a card with the sound’s written symbols. To represent a blend, place two cards next to one another. To represent a digraph, though, do not use two cards but have both letters on one card, indicating that this is a picture of a single sound. Before you ask the child to read the written symbols, make sure he or she can first repeat the sound. Then you can move on to ask the child to identify the correct symbols for the sound.

The Advanced Code

Up to this point, the sequence of instruction has been very important, but henceforth, to teach the advanced code, a much more associative approach will be needed. In the teaching of the basic code there was little conflict between spelling and reading. Twenty-eight of the English phonemes were taught using a nearly one-to-one correspondence between letter and sound. Reading and spelling reinforced each other in a simple back-and-forth manner. This basic code included most of the consonant sounds and a small portion of the vowel sounds. With 26 letters used to represent 43 sounds, some letters represent different sounds, creating ambiguities — and most of these occur among the vowels.

Students will be taught to treat consonants differently from vowels, to read consonants through a set of simple rules but to read vowels flexibly, through associations and through their oral knowledge of the English language. An incremental, gradual approach is still necessary, so that students can control and use information in an error-free way before taking the next step. The traditional approach, starting with the

e-controlled spellings of the long vowels, seems as good a way to begin teaching the advanced code as any other.

Two sets of charts follow below. The first is a group of spelling charts that map out the various spelling alternatives for the r-controlled vowels, the traditional long vowels, the diphthongs, the schwa, alternative spellings for traditional short vowels, and alternative consonant spellings. The second set of charts are reading charts, much shorter, and useful for teaching the vowel shifts which many students instinctively make when they are reading.

Spelling Charts

The R-Controlled Vowels

sound	spelling	example
/er/	er	her
	ir	bird
	ur	fur
	r after a diphthong or long vowel	fire
	ear	learn
	or after a w	work
/ar/	ar	car
/air/	air	fair
	are	care
	ar	arrow
	er	very
/or/	or	for
	ore	more
	our	course
	oar	coarse
	ar after a w	war

The Traditional Long Vowels

/ee/ (traditionally called “long e”)	
ee	see
ea	sea
e	she
y	jumpy
ie	field
ey	money
i	India
e _ e	these

/a _ e/ (traditionally called “long a”)	
a _ e	make
ay	day
ai	nail
a	nation
eigh	eight
ei	rein
ey	they
aigh	straight

i _ e (traditionally called “long i”)	
i _ e	like
i	kind
igh	night
ie	pie
y	my
y _ e (very rare)	rhyme

u _ e (traditionally called “long u”)	
ue	cue
u	union, graduation
u _ e	use
ew	few

o _ e (traditionally called "long o")	
o _ e	home
o	go
oa	boat
oe	toe
ow	snow
ough	dough

Diphthongs

oo	
oo	zoo
ew	new
ue	true
ou	you
o	to
u	July*
ui	juice
u _ e	Duke

oo (short double-o sound)	
oo	book
u	July*
ou	should

aw	
aw	lawn
au	August
ough	fought
augh	taught
al	talk, all
o	toss
o _ e	gone
a	water

ou	
ou	out
ow	cow

oi	
oi	oil
oy	boy

Diphthongs (di-phthongs = two sounds) are vowel sounds that combine more than one vowel sound. For example, “bout” and “bait” have diphthongs, as indicated by their double-vowel spellings. In most English dialects, the traditional long vowels are diphthongs as well. For instance, the long vowel in “my” is a diphthong in standard English. When you pronounce a diphthong, you can feel your mouth move as you speak the vowel.

By contrast, the /aw/ sound and the short /oo/ are pure vowel sounds, and your mouth does not move when you say them. The /aw/ and short /oo/ sounds are single sounds, like the short vowel sounds. They are included in this group because they are written with two letter. They do not force certain spelling conventions, such as the doubling of consonants, that protect the shortness of the short vowel sound.

”July” appears twice on these lists because it has two correct American pronunciations for its first syllable: both /joo/ and /joo/. Vowel pronunciations are fluid and depend on whether the syllable takes the main stress of the word, as well as other factors. This is yet another reason to teach vowels as fluid sounds, with probabilities, and to teach vowel shifts directly to those children who do not intuitively understand them and how they relate to their own oral language. This is not to undermine the importance of clear instruction using diction and recitation. Teaching children to pronounce vowel sounds cleanly and to articulate every consonant sound is very valuable, not just for the students’ speech, but also for their reading.

Dianne McGuinness has pointed out that many of the reading and spelling difficulties that American students experience involve the variability of diphthongs. I have developed a card game to build associations that helps teach these variables. Before the game can be played, a student needs to have learned the e-controlled long vowels, the “ee” spelling of /ee/, the “oo” spelling of /oo/, the “ou” spelling of /ou/. “Home cards” with these spellings are placed on a table in the same position every time. The teacher (or the dealer) shows the student a symbol/sound card of a diphthong to be learned and matches that card with a row whose home-card spelling the child already knows. The child then pronounces the correct sound. The more diphthongs the children learn, the greater demands are placed on their memory, but it is very important that the child never guess.

The dealer eventually needs several cards of the same letter or letter group. For example, there should be two “ow” cards, which could be in the placed in the /ou/ row for the word “now” or the /o_e/ row for the word “snow.” Eventually I ask the child, “Do

you want to put that card here with the /ou/s, or here with the /o_e/s?” The game allows a child to associate different spellings with the same sound and to learn the various pronunciations possible for the same spelling. It helps a child manage some of the ambiguities between reading and writing that occur in the advanced code. It teaches that how we pronounce a certain symbol is determined by its context.

Alternative Spellings of Short Vowel Sounds

sound	alternative spelling
/i/	“y” as in cylinder
	“ui” as in build
/e/	“ea” as in bread
/u/	“o” as in wonder
	“o__e” as in some

The accented short vowels are easier to hear than the long vowels and diphthongs, as can be seen by the small number of spelling alternatives for short vowels, displayed above. The complexity of long vowel and diphthong sounds has engendered a lot of confusion on the part of writers over the years. Because historically writers have been confused by diphthongs and unaccented vowels, those sounds have been represented by a great variety of spellings. Short vowels are easier to hear, so there are many fewer spelling alternatives.

The Schwa or Unaccented Vowel

The schwa is no different in pure sound from the short “u,” but it has a difference in effect because of the cadence and rhythm of speech. It only appears in multisyllabic words or in words that function only as part of a phrase, such as “the” and “a.” The spelling of the schwa is extremely difficult for many of us, and this list demonstrates why. It is hard to hear a schwa precisely, so spelling it is also difficult — so difficult that it is sometimes written without a symbol at all, as in the word “rhythm.”

Good spellers tend to remember schwa spellings by keeping in their memory a pronunciation of the word that correctly matches the spelling. For example, good spellers have often stored a mental aural memory for the spelling of import-/a/-nt, which is different from their normal pronunciation of the word “important” (im pór tánt). Other people have never been taught or have never developed such strategies for spelling. Poor spellers drop sounds from words; they do not know various spelling alternatives for vowel or consonant sounds; and they try to remember spellings as a list of letter names. In adults such spelling difficulties often do not spill over to reading difficulties, because

most people use slightly different strategies for reading and writing, revolving most significantly around vowels.

When reading unfamiliar words, the reader needs to choose from a mental list of possible sounds for a letter or letter group. A novice reader should go from the most probable to the next most probable sound for a symbol. When he or she is unfamiliar with the word — “head,” for example — the most probable reading of the word will first come up — “heed.” The context of the sentence should tell the reader, though, that “heed” does not make sense. Then the reader would try the next most probable pronunciation — “hed” — since /e/ is the second most common pronunciation of the letters “ea.” When spelling, the process is reversed. The novice speller should go from sound to symbol. Probability tells the child to spell the word “head” as “hed,” since the letter “e” is the most common spelling of the sound /e/. When this happens with a student who has finished Kindergarten, the child should simply be taught that the /e/ in head is spelled “ea.”

Spelling, Reading, and The Use of the Charts

The charts offered here help primarily for spelling and writing, as they indicate the most common spellings of sounds. The charts go from sound to symbol. But when you read, you are going from symbol to sound, so the charts are somewhat less useful. Diane McGuinness has postulated that the most effective way to teach reading is from sound to symbol; the history of written language, and studies on the incredible effectiveness of phonemic awareness, back her up. We start with children’s own language, which is oral, and help them understand that writing is a representation of it.

But it is crucial to teach children to go back and forth on the pathways from sound to symbol and from symbol to sound. Children know and can remember material more effectively when they know it backwards and forwards. The single most important way to improve the teaching of reading is to connect reading in an analytical and explicit way to writing and spelling. However, as the charts indicate, it is a good idea to teach reading with strategies specifically designed for reading and to teach spelling with strategies designed for spelling. As the example of the word “head” demonstrates, the strategies for reading and for spelling the advanced code are not exactly the same.

Reading Charts: Probabilities, Not Rules

The following set of charts is useful for reading. There are no charts for consonants because, with a very few exceptions, no pronunciation shifts must be learned among the consonants. Consonants are regular, and the accurate reading of them can be learned from a short list of reliable rules. These rules should be taught directly, starting in the second grade.

Vowels do require that pronunciation variations be learned. Some children can make these shifts instinctively, sounding out the most likely pronunciation and then shifting vowel sounds to match a word they know and instinctively making subtle

gradations of sound as they read for meaning. One first grader, as instinctive a reader as I have ever taught, looked at a card with the letter “a” drawn on it and said, “/ə/ /a_ e/ /a/ — it’s all the same thing.” In this child’s mind those three sound possibilities were so closely linked, they were the same. When he sees that symbol he checks out all the possibilities and picks the one that makes sense. This type of student is always reading for meaning, using vowel-sound manipulation as the medium to get to that meaning. Other children need to be taught how to shift the sound of a vowel without altering the sounds of the nearby consonants. These children need to be taught what to try first, second, and third when shifting vowel sounds. The teacher needs to provide direct associations for every group of vowel sounds. It is best, though, to teach these shifts as probabilities, not rules, because their exact pronunciations are so fluid.

Probabilities, Not Whole Words

There are just too many words for children to remember them all efficiently. When inexperienced readers come across the word “kind” they will often read it /k/ /i/ /n/ /d/. Instead of telling the child that it is “kind” it is better to say, “What is the second choice for pronouncing this?,” pointing to the “i.” The second most likely sound for the letter “i” is /i_e/. When the child develops this habit, not only does “kind” become decodable but so does “Titan,” and “title,” and thousands of other words where a single “i” is pronounced /i_e/.

The reflective and automatic reading of words is an important early goal of reading instruction. The active studying of whole words can, in my experience, interfere with consistent left-to-right tracking in the young reader — and consistent left-to-right tracking is crucial for fluid and accurate reading. Teaching whole words encourages children not to scan text left to right but to see each word as a gestalt. Deliberately trying to read whole words is totally different from reflectively decoding whole words. When kids begin to look at whole words instead of decoding sound by sound, “saw” starts to look too much like “was.” Because writing developed as an encoding of speech, sound by sound, reading and writing are most effectively taught as left-to-right decoding and encoding practices. Every time I see a child actively try to remember a whole word, I also see that child stop considering the meaning of what is being read.

Probability of Pronunciation

	First choice	Second choice	Third choice
The letter “a”	/a/ as in cat	/ai/ as in nation	/ə/ as in Jessica
The letter “e”	/e/ as in let	/ee/ as in he	/ə/ as in vowel
The letter “o”	/o/ as in hot	/o__e/ as in go	/ə/ as in patron
The letter “u”	/u/ as in hut	/oo/ July	/ue/ as in graduation
The letter “i”	/i/ as in kin	/i__e/ as in kind	/ee/ as in India

As can be seen by this chart of the single vowels, the vowel spellings as a group follow a very regular pattern. For the letters “a,” “e,” and “o,” the first choice is the short vowel, the second choice is the name of the letter, and the third choice is the schwa or unaccented vowel. With the letter “u,” the first choice is the short vowel, the second the letter’s name, and the third choice is /oo/ as in “July.” With the letter “i,” the first choice is the short vowel, the second choice the letter name, and the third choice the sound /ee/ as in “India.”

	First choice	Second choice	Third choice
The letters “ea”	/ee/ as in bead	/e/ as in head	/ai/ as in steak
The letters “ie”	/ee/ as in field	/i__e/ as in pie	
The letters “ou”	/ou/ as in ouch	/oo/ as in you	

The letters “ow”	/ou/ as in cow	/o__e/ as in snow	
The letters “ough”	/aw/ as in thought	/o__e/ as in dough	/ou/ as in slough
The letters “augh”	/aw/ as in taught		

The letter “y”	/ee/ as in Jimmy	/i__e/ as in my	/i/ as in bicycle
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Benchmarks

There are well-documented statistics showing huge discrepancies in the amount of time students spend reading. The publicly stated goal of having every child be an independent reader by the end of third grade is any elementary school's most important job. Without this independence, children will not read enough to acquire the vocabulary necessary for sophisticated discourse. Listed below are a set of benchmarks children need to meet to attain reading independence by the end of third grade.

Kindergarten

To be able to auditorily blend and segment three-sound words and nonsense syllables.
To know the sound/symbol correspondences for the five short vowels.
To know the sound/symbol correspondences for all single letter consonants except for "q" and "y."

First Grade

To be able to auditorily blend and segment two- and three-syllable words and nonsense syllables.
To correctly hear and transcribe all of the basic code.
To know the sound/symbol correspondences for all digraphs.
To know the sound/symbol correspondences for e-controlled vowels.
To correctly form all twenty-six letters.
To be able to read books of the level of the *Little Bear* series.

Second Grade

To be able to auditorily blend and segment a seven-word sentence.
To be able to distinguish all the phonemes of English and make correct transcriptions.
To take dictation of any material from the basic code and punctuate it accurately.
To know the rules for the soft "c" and soft "g."
To know the rule of doubling the consonant after the short vowels when adding suffixes.
To spell regular past tense verbs.
To read aloud fluently and for understanding, making pauses and voice modulations which demonstrate the understanding of punctuation.
To be able to sub-vocalize when reading.
To be able to read books at the level of *Tales That Julia Tells*.

Third Grade

To understand and use the combinational and generative nature of words (root words, prefixes, suffixes).

To take dictation of seven-word sentences (with words from the truly English layer of the language, thus excluding words of Latin and Greek or other foreign language derivation that do not take on typical English endings).

To be able to read books like *Stuart Little* by E. B. White or *Ramona* by Beverly Cleary.

To read text orally, with the rhythm of speech.

Teaching Strategies: Nursery Rhymes, Poetry, Singing, and Dictation

The biggest curriculum advantage a reading teacher has today is phonemic awareness, but even here all is not new. Many old-fashioned lessons were teaching phonemic awareness without calling it that. Nursery rhymes, songs, and poetry all heighten phonemic awareness. They are not as explicit and therefore not as effective for all students as contemporary phonemic awareness games, but they are excellent supplements to be used in the teaching of reading. Nursery rhymes and poetry use language not just to convey meaning but also to play with sound and rhythm. By playing with sound, many children become aware of sound. A rhyme is often structured around a single sound, for example:

**Blow wind blow,
Go mill go,
So that the miller can grind the corn,
So that the baker can take it,
And into bread make it,
And bring us a loaf in the morn.**

There are thirty-seven vowel sounds in this poem. Seven of them are the /o__e/ sound, represented by three different spellings. The ratio of /o__e/ to other vowel sounds is atypical, so this nursery rhyme helps teach that sound. Reciting and memorizing a poem like this, without any reference to text, is not only fun for children; it also teaches them to attend to sound and increase their auditory attention span. Older students can be asked to transcribe such a poem from dictation, allowing them to practice spelling patterns and variations on the same vowel sound.

Poems also remove some of the difficulties from using dictation in the classroom. Typically teachers need to repeat a sentence, because students cannot remember what they are supposed to be writing down. More memorable material, such as a rhythmic and rhyming poem, allows students to concentrate on hearing and encoding sounds. Dictation is valuable for young spellers, because the teacher can control the difficulty of the words that the student is writing. Its value is analogous to controlled text for the novice reader, allowing the student to learn incrementally and sequentially.

Dictation helps connect reading to writing, a back-and-forth knowledge that reinforces both processes. When dictation is introduced, children should be directly taught that spelling is the mapping of sound. They should be taught to segment as they would in a phonemic awareness exercise. Some will need to segment each word in its entirety before they start writing that word. Then, as they pronounce the sound of each phoneme, they should be taught to write down the correct spelling of that phoneme, thereby associating that sound with its symbol both visually and kinesthetically. This association reinforces the sound/symbol connection more effectively than saying the letter name while writing the symbol.

Saying the letter name creates a less direct and clear pathway between sound and symbol. This is particularly important when teaching the basic code. Later, when the student moves on to the advanced code, letter names are useful as the student labels the spellings of a phoneme in a specific word. For example, if a student asks me how to spell “reading,” I first ask her to rephrase the question and ask me only about the spelling of the /ee/: “How do I spell the /ee/ in reading?” Then I only show her the spelling of the /ee/ sound. When possible, I write that two-letter symbol, but I also say the letter names: “e” “a.” Giving verbal spellings of words is not helpful to many students. When a teacher is pressed for time and unable to have a dialogue with a student inquiring about spelling, the teacher should simply write down the entire word.

Another important skill to teach is handwriting. The motor memory that develops with the correct formation of letters helps students discriminate between similar phonemes and letters. Dictation in conjunction with handwriting practice should begin as soon as the symbol/sound correspondences are taught: it should start in earnest in the second half of Kindergarten with single sound dictation and should continue at least through the end of second grade with dictation of such poems as Robert Frost’s “Stopping by a Woods on a Snowy Evening.”

Singing is another way to help children learn to read. In singing, the sounds of language receive even more emphasis. A good music program that teaches singing out and clear diction helps students with sub-skills that are vital to reading. Singing helps students subconsciously learn syllable divisions, since notes often shift at syllable breaks. The differences between vowel and consonant sounds are exaggerated in singing. Traditional songs are also full of wonderful vocabulary and present excellent opportunities to teach root words.

As with all endeavors, singing and nursery rhymes get more complicated as the students get older. The nursery rhyme becomes the lyric poem and the simple song becomes Cole Porter. As with prose, the comprehension of more difficult poetry and song also depends increasingly on vocabulary. There is no better direct way to teach vocabulary than through song lyrics and poetry, where compression and form force authors to use more varied vocabularies. If we involve these genres in the teaching of reading, not only will we teach children to hear and use the sounds of language and therefore decode well; we will also teach them the vocabulary necessary to understand what they have decoded.

The Importance of Quantity to Achieve Quality

We know from tradition and experience that nothing improves reading more than lots more reading. We also know that students who do not want to read are rarely forced to read enough. Silent reading in the classroom is a wonderfully effective teaching tool for good readers but not for poor readers, who are generally wasting their time or even forming bad habits (a possible reason why the recent NIH study of reading instruction found that such methods as silent, sustained reading did not prove to be effective instruction tools). Clearly, simply telling a student to read more does not work for poor readers, because the time they spend with text is not good reading. We need to be sure that all of our students own the sub-skills of reading so that they can read independently. In other words, it takes a quantity of reading to become a quality reader.

Our minds work associatively, and when students are actively reading they are making countless associations and comparisons. Only through the natural learning and construction of meaning, which goes on in the mind of an active reader, can a person gain the vocabulary necessary for sophisticated comprehension. Researchers have shown that large vocabularies come from reading much more than from oral speech.

Even more is learned through constant reading than a rich vocabulary, however. Marilyn Adams, in *Beginning to Read Learning and Thinking About Print*, writes that when we read subconsciously, our minds begin to associate symbols commonly next to one another and to disassociate symbols not commonly next to one another. This subattentional association and disassociation helps us to divide unfamiliar multisyllabic words instinctively. We can teach associations, but it is not possible to teach disassociations actively. I think of these attractions and repulsions among letters as similar to the pull and push between the north and south poles of a magnet. This process helps us divide long words into manageable chunks and can only be learned through time spent reading.

The actual appearance of individual lower-case letters also seems to help us divide long words into manageable and readable syllables. The shape of our letters has evolved through tradition. Like many other traditions, this system contains effective qualities that a single inventor could not have developed. What has worked in typography has been retained; what has failed has been altered. In the standard English lower-case alphabet, some letters are tall, some are low, and some are in the middle. English syllables for the most part revolve around vowel sounds. The common shapes of lower-case letters for vowel sounds fall in the middle-height range. These configurations help syllables visually stick together. Even “y” — the one vowel letter not in the middle-height range — shows the success of tradition. The letters “y” and “i” often replace one another in spellings. With a few exceptions, the letter “i” is used when the vowel sound is embedded in a syllable, the letter “y” when it is at the end.

the letter “i”	the letter “y”
rain	ray
vein	survey
boil	boy
parties	party

Typographical tradition for lower-case letters has come to reflect how we see syllables when we read. When we notice this spelling pattern, the substitution of the letter “i” for the letter “y” when adding suffixes makes much more sense and is easier to remember. Because of the real advantages that lower-case print gives to naturalistic syllable divisions, it should be used for reading instruction from the very start.

Classroom Management of Reading Instruction

Those who argue that reading is best learned naturalistically are not all wrong. This naturalistic learning really does occur, but only after students become proficient readers. It may be difficult to get many of our students to that stage of proficiency; motivation will wane for some from time to time. Every student I have ever taught has initially been eager to read. They all love decoding simple, controlled text, no matter how silly the story. Many progress quickly and smoothly to reading stories with more interesting plots or nonfiction with more interesting facts. Some do not learn so quickly, however, crippled by weak phoneme recognition, weak sensory integration, poor left-to-right tracking, or a combination thereof. These students often lose incentive. They can decode, but it takes them more effort than the rewards of the simple text warrant.

Many effective strategies have been developed to help children through these difficult stages, including paired-peer reading, reading to younger students, reading back and forth with an older student, and reading with a senior volunteer. All work by giving emotional rewards that the text alone may not give the struggling student. Even with these activities in place, though, it is crucial to assign the right text to each student. Text that is too difficult impedes left-to-right tracking and obstructs the learning of other important strategies. Giving a student text that is too difficult can actually degrade the learning process and turn back progress.

A second and similar stage of difficulty can set in among slow and effortful readers when there is nothing they really want to read. Here again, strategies that give emotional rewards are often helpful — but less effective with older students, for whom the key is to find the right text. The Harry Potter phenomenon is a great example of how the right text can impel a child to read.

In my own experience as a child who finally learned to read well, one of the biggest incentives was my intense desire to read *The Lord of the Rings* – books that

interested me and were long enough to improve my skills simply through my reading them. Schools and teachers must get the right books in the hands of students. They may be totally different books for different children. For the child who does not understand social clues, typical fiction may not work, but a fact-filled nonfiction book may. The right text can motivate the non-natural reader to become a natural reader. Even in a Core Knowledge school, where direct and systematic vocabulary instruction is a central part of the school's mission, students need to read independently as well. Otherwise, they cannot acquire the vocabulary they need for advanced understanding.

Because of the great variety of rates at which children learn to read, whole-class instruction with a single text will rarely be the best way to teach. For some, the chosen text will be too hard; for others, too easy – and both groups will be lost. Many schools establish a common time for reading instruction, shared across classrooms, so students can be grouped efficiently. Others use small-group instruction and paired reading within a classroom as strategies that allow children to read appropriate texts.

Both strategies assign appropriate texts to learning readers, but both carry real disadvantages as well. Homogeneous groupings can cause self-esteem problems among the lower performers. Multiple groups can be noisy, and many students need quiet to learn how to read. There is no perfect solution. The fact is, the variety of reading abilities in early grades causes real management difficulties.

It may be easier to conceptualize whole-class instruction and individual reading differently. These are two learning modes through which children experience reading. In one, the teacher guides the children; in the other, the children work on their own. The two most important teacher-led activities in my own classroom are reading aloud and supervising the whole group in the reading of meaningful text. Reading aloud to students teaches them how to be active listeners and interpreters of stories; it exposes them to a rich vocabulary not contained in normal speech; it teaches comprehension strategies. Group student oral readings of a common text work best when the teacher guides discussion, leveling difficult material so every child can follow. In my classroom (which fuses K, 1, and 2), I write a daily newspaper. I use the same text to give each student a different task, matched to individual abilities. I might use the day's text as a Kindergartner's phonemic awareness game, while I might ask an advanced second grader to use information from a previous newspaper to correctly interpret today's text. Students need work that allows them to practice skills individually, too. These assignments need to be less open-ended and more directed toward specific skills, because the teacher cannot attend to every student at every moment. When a teacher takes this two-pronged approach to reading instruction, the whole class works at its highest level while reinforcing good reading strategies.

To use these techniques well, the teacher needs to know each child as an individual. The teacher who brings an analytical mindset to spelling and dictation will notice how each student is analyzing language. A teacher needs to spend time at least once a week with every student on an individual basis, listening as the student reads new but appropriate text aloud. Unfamiliar text is necessary to the process because even children who begin by reading correctly can lapse into poor reading strategies. Constant monitoring is necessary. Kids create their own strategies for reading, many of them ineffective. The teacher needs to reinforce strategies that match the structure of our language, directing students toward methods that are not just helpful in the short run but

imperative in the long run, when the student begins to encounter unknown multisyllabic words. The teacher needs to discourage students from trying to read whole words and to encourage careful, systematic, sound-by-sound reading.

Classroom realities make teaching reading difficult. Many children will need help outside of the large group. A novice teacher needs to realize that there are no perfect ways to manage reading instruction. He or she must not be afraid to ask for help. The art of teaching reading can only come with experience, but a deep knowledge of the structures and spelling patterns of English can help achieve that art more quickly.

Conclusions

Before children learn to read and write, they have a simpler experience of language, an experience of relating sound to meaning. It is the task of the teacher to connect this primary oral knowledge to the experience of print. This work becomes much easier when we approach language from the oral/aural point of view. Going incrementally, and teaching directly, we teach children to be analytical not only about print but also about our spoken language. The early primary teacher must be actively engaged in all aspects of literacy: building vocabulary; developing legible, effortless handwriting; teaching children to speak formally and distinctly; and teaching encoding and decoding.

Because print is often clearer and cleaner than speech, the child's sense of language should become clearer and deeper through the experience of learning to read. As the child's auditory discrimination grows and becomes connected with print, the process of decoding becomes automatic. When decoding becomes automatic, the child's mind begins to learn through its powers of association. When this happens, children are able to read for pleasure. They start building vocabulary, and they are well on their way to true literacy and a life full of active thought.

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