

## The process of acquiring reading skills

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How do children learn to read? Few questions, when asked of teachers, parents or the community at large are more likely to elicit debate (often heated). Even the validity of the question itself is sometimes doubted, in comments illustrated by *reading is caught, not taught*. An understanding of the answer is necessary if one is to implement effective reading instruction and to assist those students who seem to have difficulty 'catching it'. In this section we will examine the knowledge people use when they read and how they go about learning it.

### What are the reading skills that readers acquire?

**What do you do when you read?** You can get an idea of the skills you use when you read by reflecting on what you do when you read text that is unusual or unfamiliar. Have a go at reading the following text. Your goal is to retell it. As you read it, keep track of what you need to do.

*You may have heard a lot about strokes that are grooved. The idea behind this is actually very simple. The chance of you moving like this increase every time you move in a particular way. In hits yaw earnlyou motor patterns that become part of your play. Disengroovement occurs during prolonged unuse.*

Like other readers, you may have

- (1) read parts of the text more than once.
- (2) tried to link the text with what you know by trying to work out its topic. You probably found yourself early in the reading trying to discover its topic or theme. You may have used this to predict other ideas that might be mentioned. As you continued, you may have matched the ideas you encountered with what you expected.
- (3) tried to use your meaning of the written words *heard*, *strokes* and *grooved* to understand each sentence.
- (4) used the grammar of each sentence to tell you the intended way in which to link the ideas. In the first sentence, the grammar tells who did the hearing (you) and what might have been heard. you know that the *strokes* were not hearing.
- (5) used what you already know to link *strokes* and *groove*. Seeing *strokes* may have led you to predict *grooved*. If you hadn't already linked these in your knowledge, you will form a temporary link. When the text challenges existing links, 'alarm bells ring' and signal us to re-read and to change how we are analysing the data.

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- (6) tried to work out the questions that each sentence answered.
- (7) tried to fit together or integrate the ideas in different sentences.
- (8) tried to work out why the intention of *hits* , and *yaw* in the fourth sentence. They may not seem to match either the grammar or context of the sentence.
- (9) tried to make sense of the letter string *earnlyou* because it doesn't match the letter patterns for words you know. Sometimes when readers don't have a written label for a letter sting, they try saying it, to make sense of it. Saying *earnl* may help you guess that it sounds like *learn* and *earnlyou* might be intended to be *you learn* .
- (10) made sense of the letter clusters *disengroovement* or *unuse* . Although you may not have seen or heard them earlier, you can make analogies between them and familiar words such as disengagement and transfer the meanings and infer how to say them. Often we make these analogies without being aware that we are doing it.
- (11) believed that you could read it. Successful readers don't usually realize that this belief underpins their reading. However, people who have difficulty reading are well aware of how their beliefs about how they might be successful or not, and the consequences of being seen as not able to read, can impact significantly on the reading performance.

These reflections indicate some of skills that readers use in an integrated and systematic way. Some of the skills are applied to single words, some to sentences, some to the text as a whole and some to making links with existing knowledge. You can see how they fit with the areas of knowledge that reading investigators have identified.

**Models of reading skills.** One model of reading (Freebody & Luke, 1990) identifies four roles or areas of skill that readers employ as text users :

- (1) as code breakers, by using their knowledge of the relationship between the spoken sounds in language and the graphic code and symbols used to represent those sounds.
- (2) as meaning makers by using their knowledge of the meaning patterns operating in written and spoken texts,
- (3) as text users by using their knowledge of the functions of various kinds of literacy and
- (4) as text analyst by using knowledge of the ways texts represent different points of view

An second model looks at what readers do during text comprehension. This is the construction-integration (CI) theory of text comprehension (Kintsch, 1988; Adam & Butler, 1999). It proposes that readers comprehend written text by identifying its propositions and linking them with corresponding ideas in their existing knowledge. They do this by

- (1) forming a literal comprehension of each sentence as it is written.
- (2) inferring meanings implied by each sentence.
- (3) generate an impression of the gist, summary or topic of the text (Guindon & Kintsch, 1984; Lorch, Lorch, & Mathews, 1985; Mross, 1989).

Kintsch believes that mature readers build these propositions automatically as they read. They use their knowledge of written language conventions such as syntax and morphology and explicit markers such as topic sentences. Similar 'levels of text processing' models have been proposed by Just and Carpenter (1980) and Haberlandt (1988).

A third type of model identifies two main areas of skill, decoding and comprehension (Gough & Tunmer, 1986; Hoover & Gough 1990). It proposes that these areas are relatively independent of each other. It leads to the possibility that some children can read text accurately but not understand it while others may be able to understand it but not read it accurately. Decoding is often assessed by having the children read individual words or pseudo words and comprehension is measured by assessing their listening comprehension or their ability to comprehend written text without reading it aloud. The model has been supported both by patterns in reading and in teaching students who have reading difficulties (Dermody & Speaker, 1995; Lysynchuk, Pressley, & Vye, 1990). Aaron, Joshi and Williams (1999) provide a useful review of the support for this model.

***A preferred model of reading skills*** These models illustrate the range of perspectives for understanding the knowledge and skills required for effective reading. When your goal is to understand, diagnose and remediate reading difficulties, you need a framework that allows you to make comparatively fine distinctions about how a person reads and to do this systematically. The above models can be synthesized and extended to include additional areas of knowledge that influence reading. The following elaborated model (Munro 2004, 1999a, 1996) is used:

- (1) reading knowledge comprises at least three aspects:
  - (1) a knowledge of the conventions of written text (that is, literacy knowledge, such as letter patterns, how sentences are written and how ideas are organised in a written story),
  - (2) how to manage one's reading activity (that is, metacognitive knowledge) and
  - (3) oral language knowledge (for example, what words mean, how they are said and how to use grammar).
- (2) there are five types of knowledge readers have about written text. When they read they know: (1) how words are written, said and what they mean (word level knowledge); (2) the meanings and grammar of written sentences (sentence level knowledge); (3) how to link ideas across sentences and with what they already know (conceptual level knowledge); (4) a summary or main ideas in the text (topic level knowledge) and (5) the intended purposes of the text, for example, to persuade, to scare, to teach, to show how a set of ideas is interesting or useful (dispositional level knowledge).

A text may sometimes have words, sentence types or ideas that are unfamiliar to a reader. In these cases the reader uses actions or reading strategies to bridge between the text and what they know. At the word level readers read unfamiliar words by segmenting and recoding them, at the sentence level they may visualise or paraphrase sentences read, at the conceptual level they may predict or infer ideas or feelings, at the topic level they may summarize and at the dispositional level they may detect the attitudes in a text.

Readers also have attitudinal knowledge or beliefs about reading and themselves as readers. They may believe that they can be successful as readers and believe that there is value in them working at each level of the text. They may also see reading as a valuable

activity, worthy of their engagement. They may, for example, believe that it is useful to try to detect a writer's attitudes or values in a text.

When reading a text, readers use these areas of knowledge simultaneously. They integrate them into a summary of what the text says. When information from different areas clash, for example, when what they expected the text 'to say' wasn't 'said', they switch attention to particular aspects of information and to re-read or take other 'remedial' actions. The text is comprehended when the accumulated evidence most strongly supports one interpretation.

The amount of information readers can handle at any time, or their 'short-term working memory', is restricted. They handle some of the areas automatically while other aspects demand attention. Those aspects that demand least attention, that is, are more automatic, require least capacity. Recognizing words by seeing their spelling pattern uses less attention than converting the spelling to sounds and then blending. Using the meaning network to predict meanings and confirming predictions reduce the amount of short-term working memory needed.

This review indicates that readers use a range of reading skills that operate at various levels of text in a systematic, integrated way. They are sometimes used automatically and on other occasions with an investment of attention. In the latter case they are referred to as strategies rather than skills. A frequent goal of reading education is that readers learn to use them relatively automatically.

### **How do readers acquire these skills?**

There are several aspects to examining this question. Reading skills don't 'just happen'; they emerge from skills in other areas of knowledge. Second, they don't 'stay the same'; an able reading 8 year old uses word level reading skills that are different from those used by an able reading 12 year old or 16 year old. An examination of this question needs to take account of these influences.

***Reading skills emerge from knowledge in other areas.*** Readers build their literacy and metacognitive knowledge from knowledge in a range of other areas (Aaron, Joshi & Williams, 1999). Their oral language knowledge, their ability to reason, their ability to learn visual symbols and to store them in memory, their knowledge of how to learn are all relevant to learning to read (Stothard, 1994).

To learn word level skills, children need to manipulate sound patterns in spoken words (phonological and phonemic awareness) to learn symbolic codes for letters (orthographic processing), to build a vocabulary of word meanings, to recall the names and sounds of letter clusters (rapid automatised naming speed) and to learn a letter how to use what they know about some words to read others (orthographic analogy learning) (Berninger, Abbott, Thomson, & Raskind, 2001; Foorman, Francis, Fletcher, & Lynn, 1996; Lyon, 1995; Munro 2004, 2000, 1999a, 1999b; Rack, Snowling, & Olson, 1992; Wolf, Bowers, & Biddle, 2000). They need to synthesise these skills.

To learn sentence level skills, they need to know how ideas are linked into sentences in spoken language, how to use the word order or grammar and how to retain ideas in verbal short-term working memory, (for example, to rehearse and to chunk knowledge). To build conceptual and topic level skills they need to link ideas into themes, to use the links to organize what they know, to think ahead and to summarize while dispositional level skills involve understanding how the social context affects how ideas are communicated (Dermody & Speaker, 1995; Lysynchuk, Pressley, & Vye, 1990; Munro 2004, 2003, 2002a).

Self-management and control strategies while reading develop from the skill to direct and regulate one's thinking in other areas of endeavour, for example, to decide when and why to take particular actions during play, to evaluate the effectiveness of one's activity in terms of achieving a particular goal or purpose. Children learn to plan and monitor their reading activity, review their progress to their goals and to initiate corrective action when particular behaviours don't allow them to achieve their goals (Asselin, 2004; Commander & Smith, 1996; Horner & Shwery, 2002; Lambert, 2000; Pintrich, 2002; Ruban, McCoach, McGuire & Reis, 2003; Stone & May, 2002; Vaidya, 1999; Weir, 1998).

Many children show a 'natural' propensity to learn to read. These are the children who are often said to 'catch reading'. This isn't accidental. These students acquire enough of these areas of knowledge and integrate them into a 'critical mass' of knowledge that they can use to learn about written text. Different children may have different 'mixes' of these areas of knowledge but still be able to learn the same reading skills.

A key capacity here is an 'analytic- sequential' learning style that allows them to link the detailed aspects of the written language code with matching aspects of their oral language. Children whose learning style is more 'global wholistic' often find reading more difficult to learn.

These areas of knowledge provide a type of 'reading readiness' and contribute to a foundation for reading skills at any time. They are not, however, reading readiness skills in the traditional sense of providing 'pre-literacy knowledge'. In the 1950s – 1970s, reading readiness was conceptualized as the knowledge and skills students were assumed to need before they began to read. These included visual perceptual skills, motor co-ordination and spatial skills, oral language and general reasoning skills. Evidence for the extent to which these skill areas actually predicted later reading ability was indecisive.

In the present context, on the other hand, reading readiness is assumed to have on-going relevance as one develops reading skills. Phonological skills relevant to multisyllabic words and the notion of the schwa, for example, are necessary for learning to read words of two or more syllables. Similarly, the ability to relate two or three events in oral language provides a base for comprehending the grammar of written sentences that have embedded temporal and spatial clauses.

***Developmental trends in reading readiness skills and knowledge*** Children's knowledge in all of these areas develops gradually. As their phonological knowledge, for example, develops, they move from playing with rhyming patterns in words to segmenting spoken words into onset and rime and then into separate sounds. This trend is linked closely with learning to read words.

They first understand concepts in perceptual ways, then linked with concrete real-world references and finally in an abstract way. They learn gradually new ways to think about concepts, for example, to infer, to anticipate ideas, to comprehend causal relationships, generalizations and conditional relationships. They learn grammar for simple active voice sentences and later more complex structures such as the passive voice and sentences that have subordinate clauses.

Their self management of reading strategies and skills develops from egocentric speech. The strategies children first learn to use in reading are ones they have already used in oral communication. They use them initially when cued or scaffolded and gradually exercise self control.

***Reading skills develop gradually.*** As we noted earlier, reading skills at each level gradually develop as students' reading readiness and exposure to written text changes. As an example of this, we can look at how their word level skills change.

Various developmental sequences for learning to read words, for example, have been proposed. Early stage theories, proposed that all developing readers progress through the same three broad stages of reading skill (for example, Seymour & MacGregor, 1984);

- (1) first they use only some of the letters in a word and perhaps its appearance to read it (Adams, 1994; Ehri & Robbins, 1992) (the logographic stage),
- (2) next they use letter-sound decoding, that is phonic or alphabetic skills (the phonic or phonological stage) and
- (3) finally they read the word directly (the orthographic stage)

These do not to explain adequately differences in reading or variation in the types of words a reader can read at any time. Some children, for example, begin at the phonic stage (Stuart and Coltheart, 1988); they don't use logographic reading skills.

A second aspect of learning to read words is how children use what they know about some words to read unfamiliar ones and therefore to add to their orthographic knowledge. Goswami (1999) proposed they move through the following developmental sequence making analogies between written words; they

- (1) use onset and rime,
- (2) use the onset and part of the rime and
- (3) use phonemes and groups of phonemes.

Their phonological knowledge initially constrains the letter patterns they learn; they learn the patterns that match the rimes they know. Practice recoding letter clusters to sounds successfully provides a self-teaching mechanism for gaining new word-specific letter patterns knowledge (Share, 1995; Thompson, Cottrell and Fletcher-Flinn, 1996).

Children first learn simple letter-sound links and then larger letter clusters and patterns that match specific words. This learning is assisted by their phonemic awareness, having them read increasingly complex words, their sensitivity to how a context can constrain the words used in prose, their preparedness to try out alternative pronunciations and supportive feedback. The frequency with which they encounter a written word affects how accurately they read it (Laxon et al, 1994). At any time, they can read some words directly and others using letter cluster-sound recoding.

How are new links learnt? Young readers modify their existing letter cluster knowledge using a 'self-teaching mechanism'. When they first encounter an unfamiliar written word, they use various reading skills to read it; letter-sound links they have learnt, how it looks like words they know (analogy cues) and its context (Thompson, Cottrell and Fletcher-Flinn, 1996). As they see it more often, the links between the letters that comprise it are strengthened and this stored letter cluster is used to identify it. As a result, they can bypass needing to use the reading skills they used when they first saw the word (Van Orden et al., 1990) and they learn the links between phonological and orthographic components for that word. What we are seeing here is a transition in reading skills at the word level as a reader's knowledge increases.

A similar developmental sequence could be assembled to describe changes in the reading strategies used at the other levels of text. Throughout this development it is useful to see developing readers as ‘integrated wholes’, learning to apply their reading knowledge in a systematic way to texts of increasing complexity. The contemporary approach of describing students’ reading skills in terms of the types of texts they can read comparatively independently is seen as supporting this.

The acquisition of reading skills in all areas is dependent on another set of beliefs; whether the child believes she or he can be a successful reader and can learn to read (Pintrich, 2002). This is the person’s self efficacy as a reader. A positive self-efficacy is essential for learning to read (Casteel, Isom & Jordan, 2000; Henk, & Melnick, 1998; Zimmerman, 2000) and is correlated with reading achievement (Chapman, & Tunmer, 2003). It influences children’s motivation and preparedness to engage in reading activity (Baker, & Wigfield 1999; Linnenbrink, & Pintrich, 2003; Pajares, 2003), the reading goals they set for themselves and how they evaluate their on-going reading performance (Schunk, 2003).

**The process of acquiring reading skills** What then can we say about the process of acquiring reading skills? This review has identified the types of skills that readers use in an integrated and systematic way. These are used at various levels of the text in a simultaneous, ‘parallel’ way. These are sometimes used automatically and on other occasions with an investment of attention.

A number of issues relating to how readers acquire these skills were examined. First, learning reading skills was linked with learning skills in other areas of knowledge, including psycholinguistic and cognitive knowledge, the ability to symbolize and the beliefs readers have about reading and their ability to operate as readers. Second, the reading skills themselves change gradually, both in parallel with changes in readers’ ‘reading readiness’ knowledge and with exposure to more complex text, the development of a self-teaching mechanism for enhancing literacy knowledge and effective corrective feedback.

In the past there has been a tendency to focus more on separate reading skills than on the reader acquiring them. The emphasis needs to be on the use of the skills and knowledge in an integrated way by a reader. A model of reading skill acquisition that sees readers on a literacy learning journey, gradually learning the knowledge and tools for comprehending increasingly more complex text needs to underpin reading education.

One area of reading skill acquisition that has been seriously under-developed in the past is teaching readers to integrate what they are learning about a text as they read and having read. This is more than summarizing. It involves reading any text in a discerning and strategic way. It is reasonable to expect that in the information rich age of the future, teaching readers to elaborate and innovate using what they read, map it into a range of contexts and make links with other areas of knowledge will be more valued skills.

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