Reading as a Complex, Problem-Solving Activity
An overview of the reading process

Rather than basing literacy learning and teaching on a prepared curriculum with a teacher-scripted sequence, teachers need to be guided by the question: "What do proficient readers do as they problem solve increasingly difficult texts?

(Clay, 2001, p. 43)

Reading is a complex, problem-solving activity, which increases in power and flexibility the more it is practiced

(Clay, 2001).

"If literacy teaching only brings a simple theory to a set of complex activities, then the learner has to bridge the gaps created by the theoretical simplification. The lowest literacy achievers will have extreme difficulty bridging any gaps in the teaching program and linking together things that have been taught separately."
(Clay, 2001, p. 105)

By the time young children enter school they are already well along the pathway to becoming literate. From birth children are learning how to learn: they respond to their environment and the reactions of others. This making sense of experience is an ongoing, recursive process. We have known for a long time that "reading and writing float on a sea of talk" (Britton 1970). It is through talking about events as they happen and discussing their ideas that children construct knowledge and acquire the language to make sense of their experiences.

To understand the reading process we also need to look at three foundational beliefs that underpin how children acquire literacy:

– The pathway to literacy is developmental

– Social and cultural practices shape children's literacy learning

– Children take individual and multiple pathways to literacy.

The developmental perspective takes into account that a child arriving at school is already on a pathway of development and knows and has learned a great deal. The teacher's role is to start where the learner is and build on their prior experiences and knowledge. When we think about literacy learning as a social process, we are talking about children constructing meaning within social interactions - this begins at birth and continues through life. It is based on the concept of co-construction of learning. And finally, we know that each child is on his or her unique path of development. As we look at becoming literate there are two things to keep in mind:

1. We are dealing with one of the most complex phenomena in experience: the reading process is complex; learning to read involves complex processes; the fact that this tends to happen in school presents complex challenges; and the cultural determinants of literacy in the school and community are complex.

2. At the same time we need to remember that learning to speak is equally complex and linguistically challenging – yet young children manage this with remarkable ease. By the time children begin to learn to read they have already mastered learning how to talk.
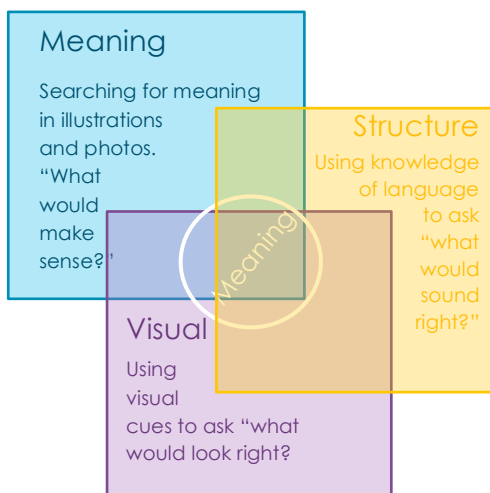
What is Reading?

Reading is the product of an amazingly complex combination of knowledge, strategies and understandings. All readers, even beginning readers, need to use and integrate various kinds of information to create meaning from texts. First and foremost readers need to expect that texts will make sense. We can describe the reading process as creating meaning from text by making connections between what is already known (prior learning) and what is in the text. Fluent readers of all ages work this way. Successful readers do much more than process information. They bring their experience and prior learning, both in and out of school, to their reading in order to construct meaning and develop new understandings.

As fluent readers we also respond critically to what is significant in a text. This develops as readers gain both experience of life and the ability to think their way through

> *"A teacher's job is always to bridge from the known to the new. Because there really is no other choice. Kids are who they are. They know what they know. They bring what they bring. Our job is not to wish that students knew more or knew differently. Our job is to turn each student's knowledge, along with the diversity of knowledge we will encounter in a classroom of learners, into a curricular strength rather than an instructional inconvenience."*
>
> *-P. David Pearson, 1997*

Sources of Information in the Text

Meaning

Searching for meaning in illustrations and photos. "What would make sense?"

Structure

Using knowledge of language to ask "what would sound right?"

Visual

Using visual cues to ask "what would look right?

There is no hierarchy to the use of these sources of information…we want beginning readers to use all three in an integrated way.

increasingly diverse and complex texts. The Common Core State Standards acknowledge this and the reading standards focus on students' information, arguments, ideas, and details based on evidence in the text. Students' sophistication in critical response and using textual evidence grows gradually from the earliest stages of reading development.

Reading is a Complex Problem-Solving Activity.

When children read, they pick up and use information from a variety of sources, work on it, make a prediction, and evaluate the response in a continuous cycle of learning. Readers take the initiative to solve problems as they acquire and practice in-the-head strategic activities.

Reading is the interaction between sources of information in the text and readers' prior knowledge and context. Reading for meaning involves readers in working with information from a variety of sources. There is no order or hierarchy to the use of these sources of information. We want beginning readers to use all three in an integrated way. One of the challenges in teaching young students to read is the fact that reading is a complex process.

Too often the teaching of reading has been reduced to a set of skills taught in isolation. This means the beginning reader has to bridge the gaps created by the theoretical simplification. Struggling readers have extreme difficulty bridging the gaps in the teaching and making the links between skills that have been taught separately.

Prior Learning- Bringing Information to the Text.

As skilled readers read we don't just process information from the text – we bring information to the act of reading. This comes from our knowledge of language, experiences in our world and our understandings about texts. For young readers it is the knowledge they bring to their reading including their vocabulary and knowledge of language that give them their starting point for connecting with a text.

The diversity among students entering our schools means that teachers need to be able to identify and build on what their students bring to the classroom. They need to know their students as literacy learners.

Knowledge of How Texts Work

Some children will arrive at school with a sound knowledge about how texts work. For others we need to immerse them in a print-rich environment where they are read to, and talk about stories. As children have frequent experiences of being read to, they begin to realize that there is a relationship between what they hear and what is written on the page. Through being read to and talking about books (texts) children learn the importance of particular words, the flow and rhythm of language and develop a sense of story.

Beginning readers learn that:

- Texts have meaning and purpose

- Texts have a structure, according to their purpose

- Print is a written form of spoken language

> *"Comprehending is not just a literacy task…it is what a child is doing when holding a conversation with someone, listening to someone reading aloud, or reading on his or her own, at any time or place. It is not an aspect of thinking that emerges only after children have done the reading or passed through the first two years of school. All educators need to hold as their top priority the expectation that learners will understand what they are reading. The reading process the child builds should involve comprehension, for if we train the child to read without involving these powerful thinking strategies from the beginning, it will be more difficult for some of them to think about content later…Comprehension lies in what learners say, what is read to them, and what they read and write; learners should know that all literacy acts involve comprehension".*
>
> *(Clay, 1998, By Different Paths to Common Outcomes, p. 217)*

– The conventions of print are consistent

– Written text is a constant

This knowledge enables young readers to develop expectations of print and make predictions as they read.

Sources of Information in the Text

While learners bring prior learning and experiences to the text they need to learn how to use this knowledge along with the sources of information from within the text. The three interrelated sources of information (often called cues) that readers use are:

– Meaning: the meanings of words and images such as pictures, in context

– Structure (syntax): the grammatical structures of phrases and sentences

– Visual: graphic information such as the features of the printed letters, words, and punctuation

Meaning Cues**.** When readers read, the meanings they make of the text (including pictures, diagrams, and graphics) come from their own experiences and world knowledge. Children build up knowledge of words and their meanings through their experiences of spoken language in everyday life. Using illustrations in texts helps young readers to build meaning. These may carry crucial information that help young readers understand unfamiliar content and setting. For beginning readers, emergent texts have strong links between the illustrations and text. These clear links provide a strong support for young readers as they make

predictions on unknown words. We want them to ask "what would make sense?

Structural cues. Children learn and develop language patterns from infancy. The relationship between oral language and learning to read is reciprocal. As children learn to talk, their grammatical structures are mostly correct. Often it is their miscues that show us what they do know. They often know the rules but have not yet learned the exceptions. For example, saying "The tiger springed", rather than "The tiger sprang", shows an understanding of the standard form of the past tense in English. Children draw on their oral language when they learn to read and in turn their progress in literacy learning enriches and expands their oral language.

Texts that support beginning readers use natural language, or have repetitive language patterns. Take for example T-Shirts by Estelle Corney from the *Ready to Read* Series that begins

 I've got a T shirt,

A yellow, yellow T shirt,

And on my yellow T shirt

There's a great big ME.

Dad's got a T shirt,

A big orange T shirt,

And on his orange T shirt

There's a great big HE.

Young readers pick up the rhythm very quickly. It is children's knowledge of language that provides the strongest source of information when making precictions on unknown words. We want

readers to ask, "What would sound right?"

For proficient readers, this is an intuitive process and they are making predictions at the text level.

Visual cues. Visual sources of information for readers are the visual features of the print itself. Visual information in a text includes letters, letter clusters, words, sentences, and the conventions of print, such as direction, spaces between words, the shapes of letters and words, and punctuation marks. It does not include illustrations.

Beginning readers *begin* to read by attending to many different sources of information in printed texts (letters, words, pictures, language, messages, stories). As they gain literacy proficiency, they learn more about each of these areas and about how to work on the interrelationships among these areas. Learners pull together necessary information from print in simple ways at first … but as opportunities to read accumulate over time the learner becomes able to quickly and efficiently construct a somewhat complex operating system with which to solve a problem. (Clay, 2001)

If we look at the reading part of a running record taken on an emergent reader who has been at school for 3 months we can see how she is beginning to integrate the sources of information. The text is from the Birthday Sleepover from the Ready to Read Series: Learning Media.

If we look closely at Amy's reading of the text, we gain some insight into her

sources of information by looking at her miscues.

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Amy 5 years 3 months

✓ springed ✓ ✓

In sprung a tiger.

Gr   ✓   ✓   ✓

"R – o – a - r" it said.

✓   ✓   ✓   ✓   ✓   ✓   ✓

"I have come for the birthday sleepover."

✓ springed ✓   ✓

In sprung a cheetah.

        ✓   ✓   ✓

Gr – r – r – r – gh" it said

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Amy did not know the word "sprung" but by saying "springed" she was using her knowledge of language structure alongside some visual knowledge. She worked out that it was the past tense of spring but doesn't know yet that sprung is an exception to the adding "ed "rule.

When it came to the word "cheetah", she said she looked at the "ch" but she also had a long look at the illustration for meaning cues.

After three months at school Amy can use all three sources of information and is able to search for information and make predictions.

Reading Strategies

We can think of reading as a constantly repeated process of attending and searching, predicting, crosschecking, and confirming or self-correcting. These strategies are the in-the-head ways by which readers make use of the sources of information. Early readers learn strategies that use sources primarily for constructing meaning from words and sentences. As children become more fluent readers, they engage in text comprehension strategies that are more complex and involve longer stretches of text.

All readers use processing strategies, but they do so at different levels, depending on factors such as the reader's proficiency, the difficulty of the text, and the purpose for reading.

The processing strategies that readers use are:

1. *Attending and searching* – looking purposefully for particular information, known words, familiar text features, patterns of syntax, and information in pictures and diagrams;

2. *Predicting* – forming expectations or anticipating what will come next by drawing on prior knowledge and experience of language;

3. *Cross-checking and confirming* – checking to ensure that the reading makes sense and fits with all the information already processed;

4. *Self-correcting* – detecting or suspecting that an error has been made and searching for additional information in order to arrive at the right meaning.

These print processing strategies constantly interact and support one another. They are used in complex combinations, and experienced readers usually apply them automatically.

Beginning readers need to be taught to use and recognise when to use each strategy; they need to be shown how to apply them deliberately and how to integrate them.   Children who have been taught letters and sounds in isolation don't necessarily know how to use this knowledge as a source of information for solving unknown words.

Yound readers who are gaining control of the reading process:

.   Attend to the ways in which print works

.   Use many sources of information (e.g., meaning. language structure, and visual cues)

.   Engage in strategic activity to solve problems (e.g., searching, selecting, evaluating, deciding, monitoring, correcting, confirming)

.   Are flexible when choosing among alternatives to solve problems

So far we have focused mainly on beginning readers and the sources of information and strategies they use. With fluent readers these strategies are automatic. Comprehension strategies

There is no more successful example of language learning than young children learning to talk. Children of all races, socio-economic status or educational background have successfully learned to talk in a natural environment of language use. Why then do so many of these same children struggle to learn to read.

"Sounding out words is not a routine response used by an efficient reader."

-Marie Clay

Children arrive at school with a wide range of print experiences. We need to think what a 1,000-book child sees and hears as important and think about what it means to provide a 'print-rich' environment for the 10-book child so our classrooms can begin to close the 990-book gap.

cannot be separated from processing strategies although fluent readers spent much less mental energy on the print processing strategies .They are no longer processing print at the word or sentence level but rather engaging deeply at the text level. They are using the comprehension strategies to lead to deeper understandings of text.

An understanding of the reading process needs to also look at the three foundational beliefs that underpin how children become literate:

:

– The pathway to literacy is developmental

– Social and cultural practices shape children's literacy learning

– Children take individual and multiple pathways to literacy.

Literacy learning is developmental: therefore, teachers' job is to start where the learner is and build on prior experiences and knowledge.

Literacy learning is a socially constructed

process in which children construct meaning within social interactions. Therefore, learning environment needs to provide rich opportunities for social interaction and guided support.

There are multiple pathways to common outcomes. Therefore, no one reading program, or one size fits all methodology, can ever reach all the children in a classroom.

These beliefs have huge implications for classroom practice.

References

Allington, R. L. (2002). "What I've learned about Effective Reading Instruction from a Decade of Studying Exemplary Classroom Teachers. *Phi Delta Kappan* June 2002

.Britton, James (1970) *Language and Learning*. Harmondsworth, England: Penguin.

Bruer, J. (Summer 1993). "The Mind's Journey From Novice to Expert." *American Educator* 17, 2: Clay, M. (1991). *Becoming literate: The construction of inner control*. Auckland, New Zealand: Heinemann.

Lyons, C. A., & Pinnell, G. S. (2001). *Systems for change in literacy education: A guide to professional development.* Portsmouth, NH: Heinemann.

Braunger, J., and Lewis, J. (1998) *Building a Knowledge Base in Reading.* Oregon: Northwest Regional Educational Laboratory's Curriculum and Instructional Services.

Britton, James (1970) *Language and Learning*. Harmondsworth, England: Penguin.

Bruer, J. (Summer 1993). "The Mind's Journey From Novice to Expert." *American Educator* 17, 2: Clay, M. (1991). *Becoming literate: The construction of inner control.* Auckland, New Zealand: Heinemann.

Cambourne, B. (2000). "Conditions for Literacy Learning". *The Reading Teacher*. Vol 53 no.6 March 2000

Cazden, C. (2001) *Classroom Discourse: the Language of Teaching and Learning*. Portsmouth: N.H.; Heinemann.

Clay, M. (1991). *Becoming Literate: The Construction of Inner Control*. Auckland: Heinemann.

Clay, M. (1998). *Different paths to Common Outcomes*. Maine: Stenhouse.

Clay, M . M . (2001). *Change over time in children's literacy development* . Portsmouth, NH: Heinemann .

Clay, M. M. (2005). Literacy lessons designed for individuals part one: Why? when? and how? Portsmouth, NH: Heinemann.

Fountas, I.C., & Pinnell, G.S. (2012). Guided Reading The Romance and the Reality in *The Reading Teache*r Vol. 66 Issue 4 pp. 268–284 International Reading Association.

Holdaway, D. (1979). *Foundations of literacy*. Sydney, Australia: Ashton Scholastic.

Jones, N. K., & Smith-Burke, M. T. (1999). Forging and interactive relationship among research, theory, and practice: Clay's research design and.

methodology. In J. S. Gaffney & B. J. Askew (Eds.), Stirring the waters: The influence of Marie Clay (pp. 261-285). Portsmouth, NH: Heinemann

Lyons, C. A., & Pinnell, G. S. (2001). *Systems for change in literacy education: A guide to professional development.* Portsmouth, NH: Heinemann.

Luke, A. (2000). "Critical Literacy in Australia: A Matter of Context and Standpoint." *Journal of Adolescent and Adult Literacy,* vol. 43 no. 5, pp. 448 – 461.

Ministry of Education, (1996) *The Reader as a Learner.* Wellington: Learning Media

Pressley, M. (1998). *Reading Instruction That Works: A Case For Balanced Literacy*. New York: Guilford Press.

Spiegal, D. (1998). "Silver Bulletts, Babies and Bath Water: Literature Response Groups in a Balanced Literacy Programme". *The Reading Teacher*, vol. 52, no.2 pp. 114- 124.

Vygotsky, L.S. (1978). Mind and society: The development of higher psychological processes. Cambridge, MA: Harvard University Press.

Wikinson, I. A. G. (1998). "Dealing With Diversity: Achievement Gaps in Reading Literacy among New Zealand Students". *Reading Research Quarterly*, vol. 33, no. 2, pp. 144 – 167.