Thank you for supporting our research in the past or at present. We are very excited about the progress that we have made in 2011. In this newsletter, the team leaders of each project report on their progress. We hope that you find these reports interesting.

Love Learning Letter-Sounds!

Linda Larsen loves learning letter-sounds! When reading a word like ‘cat’, children must be able to do three things: (1) break the letters in the word into separate parts: 'c a t'; (2) convert each group of letters into a sound: ‘k’ ‘a’ ‘t’; and (3) blend these sounds together into a spoken word: “cat”. Linda is researching how the first two steps are related, and if this relationship is different in children with reading problems.

To do this research, Linda and her team had to do three things. First, she had to develop a letter-sound rules test. This is called the LeST (letter-sound test). Then she and her team had to “standardise” this test, which means working out how well children perform on the test at different ages. To do this, Linda and her team tested over 330 children from Kindergarten to Year 3 on the LeST. From this data, Linda has been able to work out the order in which children learn the letter sounds. For example, ‘f’ and ‘t’ are learnt early; ‘ou’ and ‘au’ are learnt later.

Working Memory Training Study

Verbal working memory is the ability to store and manipulate spoken information. For example, children in a classroom use their verbal working memory to remember the instructions given by their teacher, and then execute those instructions in the proper order. Research has found that verbal working memory is impaired in some children with reading difficulties. Unfortunately, there is currently no training program for verbal working memory in children, and so no study has ever tested if verbal working memory training can help improve reading in children with reading difficulties.

This is what Erin Banales and her team intend to do. With a lot of help from Shane Davis and the team from Intrepica® (thanks guys!), Erin has developed a verbal working memory program designed for children with reading difficulties. In 2012, she will train 7- to 12-year-old children with reading difficulties and poor verbal working memory on an 8-week verbal working memory program and an 8-week letter-sound rule program. The results should be ready in 2013.

Free working memory training!
If your child is finding it hard to learn to read, and you think they have poor working memory, please contact: erin.banales@mq.edu.au
Spelling Training Study

Spelling is tricky! In English, there are lots of words that cannot be spelled using the letter-sound rules, such as said (not sed) and should (not shood). These are called “unpredictable” or “irregular” words.

If children cannot use letter-sound rules to spell unpredictable words, do we have to teach them the spelling for every single unpredictable word in English? That would be an impossible task! And it may not be necessary. Studies have found that training unpredictable words leads to gains in untrained unpredictable words. This is called ‘generalization’. However, we currently have no idea how generalization allows children to learn the spellings of these untrained words. Saskia Kohnen and her team are starting to a new study to work out which words generalize and which techniques promote generalization. Saskia and her team are now looking for poor spellers in grades 3 to 4 who are “phonetic spellers”; that is, children who spell words the way that they sound (e.g., guess as gess, enough as enuf). The study takes about 3 months to complete and includes 4 testing sessions and 15 training sessions.

Free spelling training!
If your child is in year 3 or 4 and spells words as they sound please contact: saskia.kohnen@mq.edu.au
(02) 9850 4439

The Birth of Words in our Brains!

Pete de Lissa is doing research on what happens in the brain as we learn to read new words. When we are reading, our brain produces a lot of electrical activity as it processes words. This electrical activity can be recorded and we can get an insight into what is happening in the brain and when it is happening. Pete also uses an eye-tracker to record people’s eye movements as they read. In fact, Pete records brain waves with electroencephalography (EEG) and eye movements at the same time. This technique is called Fixation-Related Potentials (FRPs). It lets us know about the brain’s activity while a person is reading words.

Pete can compare what the brain is doing when reading different sorts of words. For example, when the person knows the word versus when the word is new. This gives us an opportunity to see how the brain treats new words, and gives us insight into how these words become a part of our vocabulary. The hope is to be able to see the birth of new words in our brains!
When children first start to learn to read, they mostly use the letter-sound rules. But some whole words can’t be read by their letter-sound rules. For example, ‘yacht’ sounds like /yot/. Huachen Wang and Anne Castles are studying how children learn these words when letter-sound rules can’t be used. They are studying this in typical and dyslexic readers to see if they have different strategies.

The test they are using is quite fun! New words are taught as new inventions from a special factory. For example, children see a picture of a new invention in a fish-tank and are told about the invention. “This is a claip used to clean fish-tanks. It has a sponge and is shaped like an arm.”

Children then read the new word in a sentence to test their knowledge. The research has found that presenting new words in spoken sentences and knowing something about the new word helps children to read the word. This is particularly useful for reading words that don’t follow the letter-sound rules.

Many thanks to the schools that helped us with this project!
Wenona Girls School
Tangara School for Girls
St. Michael’s Primary School, Stanmore

Children with reading difficulties have a lot of problems learning to read for no known reason. The MACCS Reading Training Study aims to work out the best way to help these children.

Directed by Genevieve McArthur and managed by Kristy Jones and Pip Eve, the study began in 2008. In Phase 1 they split 120 children with reading difficulties into three training groups. Group 1 did 8 weeks of phonics training (i.e., reading with the letter-sound rules) followed by 8 weeks of sight-word training (i.e., reading whole words by sight). Group 2 did the reverse. And Group 3 did 16 weeks of “mixed training” which was phonics training and sight-word training on alternative days. Before and after each treatment, the children did a large number of reading tests (thanks for all the hard work, kids!)

Overall, the results showed that 16 weeks of phonics and sight-word training improves the general reading skills of children with reading difficulties as a group. The results also show that different types of training should be used to help different types of reading difficulties.

Free reading training!
If you have a 7- to 12-year-old child who is struggling to learn to read, please contact: kristy.jones@mq.edu.au/
pip.eve@mq.edu.au
02 9850 6736
How do children learn to read?

A good reader is very accurate and reads with very little effort. When very little effort is needed for reading it is said to be automatic. For reading to be automatic, children learn to recognize words as soon as they see them. This skill is related to visual representations of the words. These visual representations allow a reader to quickly know the word’s meaning and how to say it.

As these visual representations improve, children no longer need to sound out words letter by letter. These visual representations are stored in the brain’s library. This library is called a lexicon. As a child learns more and more words, they can be confused. They make mistakes between visually similar words like cat, bat and bar. To avoid this confusion, the brain has to re-sort the lexicon. Eva Marinus and Anne Castles are studying how these confusions change as reading develops.

This research has been helped by year 2 and 3 students at St Peter’s Anglican Primary School in Campbelltown and Sydney’s Adventist College in Auburn (thanks everyone!). In 2010 Eva tested these children’s reading skills. And in 2011 she has been back to see how these skills have developed. She is now analysing the results to see how the confusions between visually similar words changes as reading improves.

Macquarie Online Test Interface (MOTIf)

Working out why a child has a problem with learning to read or spell is not easy. Reading and spelling are very complicated cognitive skills that rely on many different cognitive “subskills”. To work out why a child is struggling with learning to read or spell, we need to test all these different subskills to work out if they are working properly. This can only be done with standardised tests that have age norms.

All the people in this newsletter teamed together to create the tests we need to measure the subskills of reading and spelling. Eva Marinus and Thushara Anandakumar then took a team of testers out to extremely helpful schools (see below) and tested 1200 children from kindergarten to Grade 7. We are now using this data to create norms for all these tests. We will then put these tests on the Macquarie Online Test Interface (MOTIf): www.motif.org.au, which was developed by Pip Jones from Deepend Sydney. Once the tests are on MOTif, teachers and clinicians who are registered will be able to use the tests for free.

Heartfelt thanks to our collaborators for their help with this research!

Pip Jones (Deepend, Sydney)  
Penrith Christian School  
St Paul’s Grammar School Cranebrook,  
All Saint’s Grammar School in Belmore  
Arndell Anglican College in Oaskville  
Galston High School