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How much can we learn from literacy assessment tasks?

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Abstract

This paper is based on both observations of student test taking techniques and preliminary findings from PhD research interviews with students about their strategies for reading multimodal texts in literacy assessments. The PhD research is part of an Australian Research Council Linkage project between the University of New England and the NSW Department of Education and Training conducted by Professor Len Unsworth.

The presentation investigates factors that are related to success in reading multimodal texts based both on analysis of the texts and observation of skills exhibited by students during literacy tests and follow-up interviews. In relation to analysis of the texts, preliminary findings suggest that the degree of complexity of the verbal text can be related to the degree of difficulty in making connections between words and images. In relation to the observation of student skills, there seems to be a relationship between the level of students' reading comprehension and the complexity of their oral language and vocabulary demonstrated during the interviews. Such findings support the work of several theorists and researchers (George & Tomasello, 1984; Perera, 1984; Lemke, 1988: Gray, 1990; Hasan, 1996; Painter, 1996; Jones, 1996;

Wills, Lawrence & Gray, 2006) whose ideas and research will be discussed. These preliminary findings suggest that the explicit development of oral language needs to be a focus prior to and throughout the teaching of reading.

To elaborate the assessment context this paper will first discuss other matters that became apparent during the observation of students during reading and writing assessments and will suggest how the explicit teaching of reading and writing skills can improve students' test taking techniques and thus advantage them during assessments.

Literacy assessment – a process or an end product

State-wide literacy assessment tests in NSW provide detailed diagnostic information about children's reading and writing skills, but they only assess an end product. They do not assess the processes by which children make decisions in reading and writing tests. During the administration of writing tests, it often becomes apparent to the astute supervisor that some students take one or more of the following courses of action which disadvantage them:

- Not using the planning space – this often results in no paragraphs or poorly constructed paragraphs, whereas creating a flow chart or mind map could have assisted students to better structure their writing

- Not referring back to planning, if it was done – students need to see this process modelled during joint construction of texts

- Writing without pausing to think – this often results in spoken-like writing with everyday language rather than appropriate technical or descriptive language

- Not using the editing time to improve or even read their writing – students need to see this process modelled during joint construction of texts.

Improving students' skills during writing tests is often easily achieved by good modelling of the above techniques followed by joint construction and paired work before independent writing practice.

However, some of the poor techniques used by students during reading tests are often a factor of student personality and teachers need to monitor classroom behaviours carefully to ensure students will not develop characteristics that will cause them to make the following errors in reading tests:

- Racing to finish first, despite having plenty of time

- Not checking to see if any questions have been omitted

- Getting stuck on one question for too long and then running out of time to finish

- Reading a set of questions in the test booklet about one text and having the reading stimulus closed or open at a different text. In such circumstances the 'reading test' becomes a guessing competition

Other errors became apparent during recent case studies for an Australian Research Council (ARC) linkage project between the University of New England and the NSW Department of Education. During post-test interviews, students were asked to think aloud about the stimulus texts as they read them and then say why they chose their answers to multiple choice questions. It became apparent that in addition to the above errors students often used the following strategies which disadvantaged them:

- Reading the words only and not looking at supporting images

- Not relating text and images, for example, when asked a question about an image some students only looked at the image and not the caption describing it

- Searching the page but not knowing what they are looking for – these students need to know how to identify key words in the

questions and then use skimming and scanning skills to locate these or similar words

▫ Reading and seeming to understand a text, then answering questions by relying on memory and not checking the text again to confirm answers. When asked where they found their answer, these students looked at the texts and discovered their errors.

These poor test techniques can be overcome by explicitly teaching about images and captions, key words, skimming and scanning and asking students to justify their answers.

Some students, who seemed to understand the texts while reading and thinking aloud about them, openly admitted to guessing answers in multiple choice tests. A few students could not even read the questions let alone the text, so their only choices were to omit the questions or guess. Diagnostic multiple choice tests cannot be relied on where such students guess answers or mark an answer for every question regardless of whether they can read the words. It is therefore advisable to be wary about the results of poor readers who have managed to complete the test. Teachers need to conduct an individual focussed assessment of these students' reading.

For such poor readers, analysis of the spoken language used in the ARC Linkage project interviews possibly revealed as much if not more useful diagnostic information about these readers than the reading test itself. Preliminary findings, from the recent ARC linkage project research with literacy assessments, indicate a correlation between complexity in oral language and reading comprehension assessment scores. These findings support the theories of Lemke (1988) and Gray (1990) that suggest the development of spoken language is an important factor in the ability to comprehend and produce complex text, and also the research of Painter (1996) who relates the complexity of the structure of oral language, particularly embedded clauses, to the development of thinking. However, the state-wide focus on reading and writing has resulted in pressure on teachers to spend more time on written texts and consequently spend less time on speaking and listening. There is also a need for teachers to spend more time on viewing skills in the classroom,

since questions in the Basic Skills Tests which involve visual literacy are among the most difficult, having fewer correct responses. It would seem that many teachers either do not feel confident about teaching visual literacy or they do not analyse the diagnostic results and therefore do not realise that they need to focus on these aspects of texts.

PhD research into multimodal reading comprehension and oral language

In the first stage of the ARC Linkage project, multimodal reading texts and questions from the 2005 Basic Skills Test (BST) were analysed. In 2006 over 100 students, then around nine and 11 years old, were interviewed about the multimodal texts and their reading strategies when answering the questions involving image-text relations. Analysis of the texts and results showed that students had more difficulty in comprehending image-text relations that required an understanding of parts of texts characterised by high structural complexity. For the PhD research, it was considered that the analysis of the texts, student results and research interviews would provide appropriate material for testing a hypothesis relating capacity for oral complexity to the comprehension of complex sentences.

Responses to the Year 5 text *Tohwabba Art Gallery* were particularly appropriate for testing the hypothesis because there were two questions requiring understanding of image-text relations based on different parts of the text. The more difficult question, for which only 44 per cent of the state had the correct answer, involved understanding the following structurally complex part of the text to know that the dark areas represent traps and nets:

The sailfish is believed to be a cunning fish, (independent clause)
able to feed amongst the various fish traps and nets (dependent clause + ellipsis)
shown by the dark areas, (dependent embedded relative clause + ellipsis + passive voice)
without being caught. (dependent adverbial clause + passive voice)

The easier question, for which 66 per cent of the state had the correct answer, involved understanding the following simple sentence and then

making connections to the image by identifying the part of the picture (top) where the artist had painted the fresh grass:

The kangaroos are feeding on the fresh grass after the rain.

This question was easier despite the fact that it had a very plausible visual 'distractor', some creek weed at the bottom of the picture, which 27per cent of children chose instead of the correct answer. The structurally complex part of this text was characterized by low lexical density, so comprehension of lexically dense terms was not an issue.

The quantity of complex language features exhibited in the interviews was expected to be low in view of the fact that formal language is not used as often in spoken language as it is in written language. As Jones (1996, p13) points out, "Written language is synoptic, about things" whereas most "spoken language is essentially dynamic, about happenings". However, when students talk about things (texts) in interviews, they will be more likely to use written-like 'synoptic' language than they would in conversational dialogue, because the language will be at the reflective end of the spoken language continuum.

The hypothesis that oral language development is related to reading comprehension will be supported if students, who had higher achievements in the 2005 BST reading comprehension tests, use grammar that has more structural complexity shown by a higher percentage of dependent clauses (adverbial and relative clauses including those that are embedded) and more instances of ellipsis or passive voice in their interviews than students with lower levels of reading comprehension. Lexical (semantic) complexity will also be examined in the form of the number of examples of non-core words, classification shifting and nominalisation. Cultural background (gender, geolocation and Aboriginality) will also be considered in the final research to see whether there are any differences for certain groups of students in view of the fact that students, who are male and/or Aboriginal and/or live in remote areas, have lower mean reading scores.

Oral language complexity and the link to comprehension

Campbell & King (2003, p53) state that, "Oracy is the pathway to solid success as a learner, and the means of feeling success as a learner. Learners must be communicators and thinkers before they can be effective readers and writers."

The hypothesis, that capacity to use complex sentence structure in oral language is related to capacity to understand complex written sentence structure, is inferred by Gray (1990, p113):

> it is doubtful if children can produce and understand written texts in any depth unless they can orally produce texts of that type themselves. We know also that children from literacy-oriented homes come to school with considerable experience in producing such texts, eg, Painter (1986), Wells (1982), Scollon & Scollon (1981), Heath (1982).

It is relevant that Gray says, "<u>can </u>orally produce texts of that type" not 'do', since one would <u>not</u> expect children to speak in a fully formal written-like mode for everyday purposes. However, as children mature their spoken language also matures and has the capacity for more complexity, so one could expect to hear some occasional evidence of more formal language structures such as complex sentences and/or nominalisations.

The reason why familiarity with complex language structure is important is that understanding of syntax (the patterns or grammatical structure of language) is one of the four basic systems for cueing meaning in text. It allows us to predict or anticipate which grammatical construction will come next in a sentence, and this is how we make sense of a text like 'Jabberwocky' even though it is full of nonsense words (Green, 2003, p115).

Perera (1984, p156) points out that some grammatical constructions are not frequently produced in oral language until adolescence and she includes the following:

- □ complex noun phrases (noun groups)

- □ adverbial clauses of place, manner, concession and hypothetical condition

- □ non-finite adverbial clauses (apart from those of purpose)

- □ some relative clauses (those introduced by a relative pronoun plus a preposition)

- □ some types of ellipsis

- □ all but the commonest sentence connectives

In regard to comprehension, Perera (1984) found that many grammatical constructions are not fully understood when a child starts school. These constructions include reversible passives and ellipsis of the verb or object in compound sentences. She also found that it is many years before children fully understand "adverbial clauses introduced by *although, unless* and *provided that*, as well as hypothetical and inferential 'if' clauses, many sentence connectives; and discourse-level ellipsis that is remote from its antecedent" (p157).

Perera (1984) goes on to argue that, "children do not acquire these constructions until they are reading fluently, and then they are more likely to use them in writing than speech" (p157). It is certainly true that, for literate students, complex grammatical constructions are more likely to be used in writing than speech. However, if one considers the claim that reading fluency precedes the acquisition of complex grammatical constructions in oral language alongside Vygotsky's (1962) observation that a child can use grammatical structures correctly before he understands their meanings, then it is important to remember that fluency and comprehension are not the same. Vygotsky (1962, p46) states, "The child may operate with subordinate clauses, with words like *because, if, when* … long before he really grasps causal, conditional or temporal relations." It would therefore seem that ability to use complex oral language precedes comprehension of complex language structures in texts and this would support Lemke's (1988) statement that dialogue allows for "bridging between formal and colloquial language" (p140).

Scaffolding reading comprehension by speaking text meanings

The success of Brian Gray's Accelerated Literacy (AL) program (Wills, Laurence & Gray, 2006) suggests that developing students' oral language aids their reading comprehension. In AL, students with low literacy skills are taught to read while being supported (scaffolded) by a teacher who first builds the field of knowledge about the text and then preformulates questions ensuring they can be answered while unpacking the complex written language into oral chunks that can be comprehended. At the same time this process develops the literate oral language that students need to discuss and comprehend literate written texts. In the Transformations stage of the AL program, students focus closely on word choice and sentence structure by reordering the text to find out how changing the order results in different meanings and then they determine which grammatical constructions make sense until finally they understand why the author chose the structure he or she used to achieve the intended meaning.

The importance of "the child's own productive linguistic capabilities" for comprehending or "processing input" is substantiated by George & Tomasello (1984, p125) who found that even though "young children partially comprehend linguistic input somewhat above their own productive level, comprehension at an inferential level is best when input is closer to the child's own productive level". The AL scaffolding of highly literate texts unpacks the complex language which brings the texts closer to the "child's own productive level" so that the texts can be more easily comprehended. It also increases students' productive level, thus bringing it closer to the level of the text, because it "helps students fully speak their meanings, out loud" (Lemke, 1988, p140) and in this way the scaffolded dialogue is "bridging between formal and colloquial language", giving students access to the language of literate texts.

Many students from households with high levels of education have already experienced dialogue that scaffolds their understanding but many students do not experience this dialogue at home if they are from working class families (Heath, 1982), Aboriginal families (Gray, 1990) or families in low socio-economic areas (Hasan, 1996; Williams, 1998).

Williams' research was in Sydney, Heath's was in the USA. More recent research by the RAND Corporation in 65 Los Angeles neighbourhoods found that "the two factors associated most strongly with school readiness are the educational attainment of mothers and neighbourhood poverty" (Erebus, 2005, p9). The PISA study in Australia found that the between-school variance in Australia, although relatively small, was largely explained by the socio-economic status of the students. However for Indigenous students, the relationship between socio-economic status and reading achievement was much weaker, which suggests that socio-economic status is not the only factor here (Greenwood, Frigo and Hughes, 2002, p25).

Other recent studies have compared oral comprehension with reading comprehension. Beron & Farkas (2004, p125) compared oral language and reading success by using a test of *auditory processing*, which directly taps the child's ability to extract meaning from standard English speech, and they found that this skill is a key mediating variable for the effect of class and race effects on reading achievement. Other US studies by Chall & Jacobs (1996) and Biemiller (1999) also compared reading comprehension with oral comprehension or vocabulary development but none of these studies compared reading comprehension with the oral production of complex language, which is what the current study will investigate.

The theoretical basis for a hypothesis relating complexity of spoken language to the comprehension of complex written sentences comes from Olson and Torrance (1983, p145) who state that during the early school years there is an important conceptual transformation which "depends on the development of a new orientation to language, specifically, an attention to and a competence with the structure of language per se as opposed to competence with the contents, intentions or messages expressed by the language". They argue that "it has to do with learning to differentiate form from content, what is said from what is meant". They suggest "that there is a shift from attention to the beliefs and intentions of persons towards the meanings and structures of sentences" (p. 148). This shift is also evident in the structural and semantic complexity of texts along the mode continuum.

Subordinate clauses used in interviews

Initial analysis of interviews with 20 students whose reading scores placed them in the top achievement band and twenty students with reading achievement in the lowest bands in the 2005 BST for Year 3 and Year 5, showed that, students with better reading scores used more dependent clauses in their spoken language.

Year 3 Students	Percentage of dependent clauses		Year 5 students	Percentage of dependent clauses
Top 29% Band 5	From 17% to 20%		Top 21% Band 6	From 20% to 33%
Bottom 23% Bands 1 & 2	From 4% to 8%		Bottom 28% Bands 1 to 3	From 5% to 10%

A metropolitan male Aboriginal student with a reading score in the top band in the Year 5 BST had the highest percentage of dependent clauses out of the total number of clauses, and a provincial female Aboriginal student with a low reading score had the lowest percentage of dependent clauses for the Year 5 students.

For the students who sat the 2005 Year 3 BST, a metropolitan male Aboriginal student with a reading score in the top band had the highest percentage of dependent clauses while the lowest percentage was in the spoken language of a remote male non-Aboriginal student with reading achievement in the lowest band. The only students in Year 3 who used adverbial clauses preceding independent clauses in their spoken language were high scoring readers. In the 40 interviews analysed so far, some Year 3 students and one Year 5 student used no dependent clauses.

Perera (1984) notes that from the age of six the number of subordinate clauses used in spoken language stays constant then around 11 years of age it begins to increase and, from age six to 13, students use more finite adverbial clauses. As students move along the mode continuum, the use of more adverbial clauses is an important stage in learning to link related ideas within sentences. Students have to learn to use subordinate clauses in complex sentences before they can cope with lexically dense text

which involves the nominalisation of ideas or the representation of ideas as single words or nominal groups instead of as whole clauses.

As Brian Gray (1990, p113) points out, "it is doubtful if children can produce and understand written texts in any depth unless they can orally produce texts of that type themselves". In order to help 'at risk' students to comprehend and "orally produce texts of that type themselves," the National Accelerated Literacy Program teaching sequence (Wills, Lawrence & Gray, 2006) includes an exploration of text structure during the High Order Book Orientation stage and attention to the impact of word order and word choice during the Transformations stage.

From the small sample taken from the PhD study it is clear that both Aboriginal and non-Aboriginal students have the capacity to achieve high reading scores and to develop complexity in their oral language. Some researchers such as Perera (1984) claim that reading fluency leads to oral complexity, however, the success of Accelerated Literacy seems to prove Gray's (1990) suggestion that understanding of written texts is probably preceded by the students' ability to "orally produce texts of that type themselves" (p113). As some students might use a working class English or Aboriginal English dialect and such dialects have some aspects of grammar that differ from standard Australian English grammar, it was decided to examine the interviews to see if any students used non-standard grammar and, if so, whether they had lower reading comprehension.

Features of non-standard English in student interviews

Few examples of non-standard English dialects such as working class or Aboriginal English were found in the interview transcripts and where they were found there were only one or two instances except for one Year 3 Aboriginal student who had five instances of non-standard verb form (the use of 'seen' for 'saw' and 'done' for 'did'). Since this student's reading score placed him in Band 5 (the top 21 per cent of students) for reading comprehension and he used 17 dependent clauses to 86 independent clauses giving him a relatively high percentage of dependent clauses, it is clear that dialectal differences in word choice did not impact

on this student's ability to use grammatically complex oral language or to comprehend written text.

This example is in keeping with the findings of Daly (2006) in which no direct relation was found between reading comprehension and the use of the Aboriginal English dialect, despite earlier findings that lower scores on grammar criteria in writing and language tests were related to the use Aboriginal English.

Use of the passive voice

In the first 20 interviews analysed, only one student used the passive voice. This student was a male Aboriginal high achieving reader in Year 5. However, the interviews were not constructed in any way that would logically elicit the passive voice, which is not a common feature of conversation. Baldie (1976) posits that the ability to handle reversible transformations is a precursor to the use of the passive voice. However, Anna Trosborg (1982, p39) found that children can "to some extent produce the passive before they can make correct judgements of the equivalence of corresponding active and passive sentences". It would therefore seem that capacity in oral language precedes the ability to fully comprehend the passive voice.

Baker and Nelson (1984, p19) cite Horgan who found that no Agentive Non-Reversible passives appeared until nine years of age and no child produced both Reversible and Non-Reversible passives until age 11. The importance of scaffolding for much earlier production of passive sentences is evidenced in the research of Baker and Nelson (1984, p19) who found that, in three and four year olds, "once the passive transformation was presented to the children in input, and especially when their own utterance was recast, the children … quickly began to use passives and soon used them with wide semantic variation."

Aspects of lexical complexity in oral language

Many researchers have noted that Western style of literacy (Australian education) is 'formal' (Harris, 1984), 'essayist' and 'decontextualised' (Scollon & Scollon, 1981) and involves "many kinds of 'secret' English which are not made explicit in schools" (Martin, 1990) and one of the

features they refer to is a high level of grammatical metaphor, such as nominalisation, that occurs in lexically dense text. Ideational metaphor "produces a high level of abstraction in text, making it inaccessible to large sections of the community" (Martin, 1992), but lexically dense texts are not common in primary school, as Halliday (2004, p636) notes:

> Children are likely to meet the ideational type of metaphor when they reach the upper levels of primary school; but its full force will only appear when they begin to grapple with the specialized discourses of subject-based secondary education.

However, when one considers the gradual development of lexical density along the mode continuum, then it would be logical that a precursor of nominalisation (verbs or processes expressed as nouns) would be classification shifting (processes expressed as adjectives as part of a noun group, e.g. *the capsized boat*) and the use of 'non-core' vocabulary (more technical and formal or less everyday/colloquial words), for example, *capsiz*e or *indicate*, would develop before students start to use those verbs as adjectives in a noun group, as in *the capsized boat,* or turn the verb into a noun, such as *indication.* The term, non-core vocabulary (Carter, 1987, p33), is opposed to core vocabulary, that is, core items are generally seen to be the most basic or simple. Carter (1987, p35) suggests a test for core and non-core vocabulary by using syntactic substitution, such that "in the lexical set, *gobble, dine, devour, eat, stuff, gormandize* each of the words could be defined using 'eat' as a basic semantic feature but it would be inaccurate to define *eat* by reference to any other of the words in the set (i.e. *dine* entails *eat* but *eat* does not entail *dine*)." He also suggests other tests for core words including tests of antonymy, collocability, extension, summary, associationism, superordinateness and whether the term is culture-free.

When the first 40 interviews in the current PhD study were analysed, high achieving readers used more non-core words (not counting those any used in the reading text), for example, *drought.* Only one high achieving reader used classification shifting, *the capsized boat*, in his interview and nominalisations were only used by four students with high reading scores.

Conclusion

A relationship between complexity in oral language and reading comprehension is emerging in the current research. The success of Accelerated Literacy, which involves talking about literate texts before reading them, suggests that developing oral language may be crucial to reading success. The research further consolidates the clear calls by many researchers for attention to oral language development in addressing the role of grammatical understanding in enabling students to understand structural connections within texts leading to comprehension of more complex reading material (Unsworth, 2002).

To be an effective reader, a student must take on four roles; coder, participant, user and analyst. The decoding role is not just about grapho-phonic relationships, but an effective code breaker is someone who understands the 'fundamental features' of written texts (Freebody & Luke, 2003, p56) and grammar is one of those features. The text participant role involves understanding the ways in which written, visual and spoken texts are constructed and meanings are made, so this role also involves understanding of grammar and genre. By performing the four roles, the reader is accessing four resources which are "inter-related and interdependent" (Freebody in Healy & Honan, 2004, p1).

It seems logical that, when students use oral language to reflect on the meanings in texts and how texts are structured to achieve those meanings, the students are developing both their oral language repertoire and their comprehension of written language. For some low-achieving readers, the complexity of multimodal text negotiation appears to require the development of these students' linguistic experience as well as explicit attention to the meaning-making resources of images and image/text relations. As Lemke (1988, p136) points out, spoken language is "the medium in which we understand and comprehend". It follows that students need to use oral language, which is scaffolded by teachers or other adults, to improve their comprehension of written texts.

State-wide reading tests can only provide useful diagnostic information about students who can access textual meanings on a literal, interpretative or inferential level and who do not give up and guess.

Teachers who encourage students to have a guess if they do not know the answer are treating the reading tests like competitions, not as the diagnostic instruments they were designed to be. The state literacy assessments cannot diagnose a speech deficit or the need to scaffold spoken language for 'at risk' readers and writers. It is only by looking at the larger picture and making correlations that such a need can be deduced.

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