The metacognitive reading strategies of five early readers

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ABSTRACT

The purpose of this study was to examine the metacognitive reading strategies of five children, four to six years of age, who were reading fluently prior to formal instruction in grade one. Fluency was judged on whether the children could conduct meaningful reading (Smith, 1988) with relative smoothness (Duffy and Roehler, 1989). Methods of this case study included semi-structured interviews, role playing, observations and informal miscue analyses of oral reading. The children's personal characteristics and home environments provided a context for their reading strategies, and particular attention was given to the caregiver-child interactions which may have facilitated the development of metacognitive reading strategies.

Findings suggest that each of the children utilized a variety of metacognitive reading strategies and showed individual preferences for certain strategies, as indicated by the number of times these strategies were used. The children also responded differently to particular research methods, a finding which supports the employment of a variety of methods when studying young children. Findings from this study also draw a relationship between caregiver-child interactions and the development of particular metacognitive reading strategies.

RÉSUMÉ

Les stratégies métacognitives de lecture de cinq lecteurs précoces

Dans ce mémoire de maîtrise on a examiné (Brenna, 1991) la planification, l'auto-guidage, et les activités d'évaluation de cinq enfants, âgés de quatre à six ans, qui savaient lire couramment avant l'enseignement formel de l'école. Les méthodes utilisées dans cette étude de cas comportaient des entretiens semi-directifs, des jeux de rôle, des observations, et des analyses informelles de méprises en lecture orale.

On a développé des profils métacognitifs de lecture pour chaque enfant en termes de connaissance de texte (Wason-Ellam, 1994) aussi bien que de connaissance de soi et de la tâche (Baker et Brown, 1984). On a décrit les caractéristiques personnelles des enfants et de leur environnement familial en tant que contexte de leurs stratégies de lecture et on a accordé une attention particulière aux interactions enfant-intervenant susceptibles d'avoir facilité le développement des stratégies métacognitives de lecture.

Chacun des cinq enfants a utilisé différentes stratégies métacognitives de lecture et a manifesté des préférences personnelles pour l'utilisation de stratégies particulières qui garantissent une lecture significative. Lors de l'identification de mots, les lecteurs les plus avancés avaient tendance à se focaliser sur une combinaison d'indices grapho-phonémiques, syntaxiques et sémantiques, alors que les lecteurs moyens du groupe recouraient davantage à la syntaxe et à la sémantique. Le lecteur le moins avancé recourait à des indices grapho-phonémiques à l'exclusion de toute autre information.

L'information fournie par cette étude peut être utilisée pour établir une relation entre les interactions enfant-intervenant et le développement de stratégies méta-cognitives de lecture particulières. Les cinq enfants avaient tous eu des intervenants qui avaient créé un environnement riche en langage, favorisant indirectement le sens du langage narratif. Les enfants étaient en mesure d'expliquer certaines stratégies prédictives en termes de grammaire ou de syntaxe, démontrant ainsi qu'un 'enseigne-ment' indirect avait bien eu lieu.

Certaines des stratégies métacognitives de lecture peuvent aussi être attribuées à des interactions directes relatives au processus de lecture. Les cinq intervenants avaient traité la lecture comme une résolution de problème. Quand il fallait aider les enfants, chacun fournissait un étayage (Bruner, 1975 et 1978) encourageant une activité indépendante. On peut établir une relation entre les conseils donnés par les intervenants et les stratégies utilisées par les enfants pendant les moments de lecture libre. Par exemple, les enfants travaillant dur à séparer un mot inconnu en unités de son avaient eu des intervenants qui mettaient l'accent sur l'oralisation en cas de difficulté. Les enfants qui avaient eu des intervenants leur conseillant de séparer les mots longs en parties plus petites et significatives ou de relire pour construire un contexte prédictif apparaissaient utiliser souvent ces stratégies. On a pu observer qu'un autre enfant, dont l'intervenant s'appuyait sur sa capacité à s'auto-corriger ou à sauter des mots non familiers pour aller chercher le sens général de l'histoire, faisait un essai rapide, puis sautait les mots inconnus dans sa quête de 'l'histoire'.

La fait que les cinq lecteurs précoces traitaient la lecture comme une résolution de problème et utilisaient différentes stratégies métacognitives, celles qu'encourageaient les intervenants, a des implications pour les enseignants et les parents. Les jeunes lecteurs ont besoin de modèles de lecture en tant que processus de résolution de problème, des exemples enseignant des possibilités de résolution des difficultés et un encouragement à utiliser des stratégies métacognitives permettant de contrôler la construction du sens à partir des textes.

BACKGROUND INFORMATION

Previous research has provided a great deal of information regarding the personal characteristics and home environments of early readers – children who have learned

to read prior to formal instruction in grade one (Durkin, 1966; Torrey, 1969; Clark, 1976; Thomas, 1985; Anbar, 1986). Little research has been conducted on the thinking and reasoning processes early readers use in comprehending text – the deliberate, planful activities, described as metacognitive reading strategies, which are applied flexibly to ensure successful reading (Baker and Brown, 1984; Garner, 1987).

Metacognition has been examined in terms of the strategies which fluent readers use more frequently than non-fluent readers (Olshavsky, 1977; Paris and Myers, 1981; Garner and Kraus, 1981–82; Wingenbach, 1984). Metacognitive reading strategies have been discussed in terms of two categories: self-knowledge, or knowledge about cognition; and task-knowledge, which includes the self-regulatory mechanisms used by active readers (Baker and Brown, 1984). A third category, text-knowledge, evolved out of a consideration of data produced by this study and is a term borrowed from Wason-Ellam (1994).

The examination of the role of parents in facilitating literacy development has put forth the concept of scaffolding – where parents work within the children's zones of proximal development to assist them in accomplishing with help what they could not master independently (Bruner, 1975, 1978; Vygotsky, 1978; Wells, 1981; Teale, 1984). While a number of researchers suggest that cognitive processes used in reading events have been learned through interaction (Flavell, 1981; Goody, 1982; Heath, 1982; Bloome, 1983), metacognitive reading strategies have not previously been linked to particular caregiver-child interactions.

METHODOLOGY

Research design

Four visits into each of the children's homes set the temporal parameters of the case study. The researcher listened to the children read unfamiliar picture-books, employed semi-structured interview questions during and after the reading, and recorded observations and an informal miscue analysis of the oral reading (examining type rather than number of errors). Role playing, where the children interacted with puppet characters, provided another method of gaining information. The children were invited to answer the puppet's questions regarding reading and, in some cases, teach the puppet characters to read and identify and evaluate their reading errors.

The fourth research visit focused on the children's primary caregivers, and semi-structured interviews were used to inquire into the children's reading beginnings and the support parents and grandparents had provided. Caregivers were also asked to support or discredit the strategy profiles which the researcher had developed of their children.

Data were collected using audio-recordings which were transcribed following each research visit. Field notes were kept to register a rich description of the home milieu that supplements the information these recordings provided, and copies of the stories were used to record miscues. The researcher also kept a personal journal to record tentative impressions formulated as the data were collected and analysed as well as to note further questions arising from initial observations.

Subjects and setting

The early readers involved in this study – Jan, Sandi, Abbey, Lyle and Megan – varied in age from 4 years, 11 months to 6 years old. Their homes, while ranging on a socio-economic spectrum, were child-centred, rich in children's books and games, with caregivers who spent time talking with, and structuring learning experiences for, their children. Patterns which appeared in the home environments of these children are listed as follows:

> Significant adults who valued reading
> Continual exposure to new books
> Collection of children's books which had been read often
> Caregivers surprised by child's early reading ability
> Caregivers who stressed independent problem-solving

The early readers involved in this study had a variety of individual interests and characteristics, but there were patterns appearing here as well. Table 1 identifies these similarities.

Table 1. Personal characteristics and interests of the early readers

	Sandi	Jan	Abbey	Lyle	Megan
Early favourite book	X	X		X	X
Interested in new words	X	X	X	X	X
Strong desire to learn to read	X	X	X	X	X
Read independently for pleasure	X	X	X	X	X
Interested in independent writing	X	X	X	X	X
Perfectionist	X	X		X	
Good memory	X	X	X	X	X

ANALYSIS AND FINDINGS

The following discussion examines the major results of the case study in terms of the children's metacognitive strategies and the caregiver-child interactions which may have facilitated these strategies and also addresses the choices made regarding research methods.

Metacognitive strategies

The results of the study demonstrate that all five children employed a variety of metacognitive strategies, with individual preferences for particular strategies, as they read. It is evident that these readers viewed reading as a problem-solving process and utilized knowledge of self, task and text to accomplish successful reading and to recover meaning through error detection and repair. The most striking patterns are reported below.

Self-knowledge

In addition to being able to describe their common metacognitive reading strategies, the five children utilized a knowledge of self to regulate strategy employment, choosing strategies which worked for them in terms of the task and the situation. For example, Sandi, Abbey and Lyle distinguished between strategies for oral and silent reading and Megan discussed how she varied her strategies when she was tired. Jan to her advantage used an understanding of her tendency to reverse letters – if the 'b' word didn't make sense, she tried 'd' as an initial consonant. Lyle also described skipping or using synonyms for some types of words – proper names, for example – which he realized he could not predict from context.

A knowledge of self supported active decision-making in terms of what, as well as how, these children read. They applied knowledge of themselves as readers to create situations in which they would be successful. In this way, they were able to modulate their own zones of proximal development (Vygotsky, 1978), creating situations in which they would be able to guide themselves as readers and solve problems independently. Book selection strategies which helped them ensure suitability of reading material were as follows:

> Examining the book jacket (title, author, picture)
> Surveying pictures throughout the book
> Assessing text familiarity
> Evaluating text difficulty by determining level of vocabulary (too easy/too hard/just right)
> Noting size of print
> Skimming the first few pages
> Asking for advice

Task-knowledge

All five children treated reading as an active, problem-solving process. They demonstrated and described a number of metacognitive strategies which were designed to reduce the possibility of meaning breakdown. Table 2 identifies the most common of these strategies and labels them 'active reading strategies'. The children also employed a variety of metacognitive strategies after they realized that errors in word-identification had occurred. The most common of these strategies are identified in Table 2 as 'repair strategies'.

It is interesting to note that the readers described as 'most fluent' according to the complexity of texts which they could read smoothly and with comprehension, texts such as *The Garden of Abdul Gasazi* by Van Allsburg and Kent's *The Fat Cat*, demonstrated preferences for similar strategies. Abbey and Lyle, the two most fluent readers, tended to use semantic and syntactic information in combination with grapho-phonemic cues to predict appropriate words. They were content to skip unfamiliar words and continue reading when doing so did not interfere with story understanding. Sandi and Megan, the readers of average fluency in the group, focused on context clues and did not rely heavily on grapho-phonemic cues. Jan, the least fluent reader in the group, almost invariably chose to sound out unfamiliar words, with much less reliance on context cues. She also demonstrated the least total number of common strategies in comparison to the other children.

Table 2. Dominant metacognitive reading strategies of the five early readers

Strategies	Children				
	Most Fluent		More Fluent		Fluent
	Abbey	Lyle	Sandi	Megan	Jan
1. Awareness of Errors	X	X	X	X	X
2. Repair Word-Identification Strategies					
a. reread	X	X	X		
b. asked someone			X	X	X
c. sounded out the word	X	X			X
d. predicted word from context		X	X	X	
e. disregarded problem and read ahead	X	X	X		
3. Active Reading Strategies					
a. utilized semantic, syntactic and grapho-phonemic cues simultaneously	X	X	X		
b. led with semantic and syntactic cues				X	
c. led with grapho-phonemic cues					X
d. linked text to personal experiences				X	
e. linked text to prior knowledge				X	
f. used pictures to build context prior to reading				X	
g. made accurate predictions				X	

Text-knowledge

All five children were developing knowledge about texts and employing this knowledge in terms of metacognitive reading strategies. For example, fluent oral reading was related to conventions of text. Children emphasized the dialogue of story characters and attended to punctuation, keeping track of meaning in terms of units of ideas.

Story language was seen by some of the children as distinct from daily speech, and this assisted them in predicting common phrases such as *Once upon a time*. Story sequence was judged as critical to understanding, and when children caught themselves skipping a page, they self-corrected by turning back, even when syntax remained unbroken by the error.

Connections between books were tools in helping these children predict and confirm words. Knowledge of title, author and illustrator was valuable in terms of developing such connections. The title and pictures were also important in understanding the story. A knowledge of both may have cued specific, unfamiliar words as well as built context for the story.

These children were generally aware that novels are more difficult to read than picture-books, and some of the children identified reasons: novels are longer and contain more complex vocabulary. This knowledge was acted upon when children initiated turn-taking or adult read-alouds to ensure successful encounters with novels.

Text-knowledge of these early readers is summarized as follows. It is important to note that the more fluent readers tended to be more experienced in terms of knowledge about texts.

The reading of texts is related to the writing of texts

Stories are written in sequence

Connections can be made between books

The title is useful in a beginning understanding of the story

Books have authors, titles, and sometimes illustrators

In picture books, the pictures often 'tell' the story

Novels are more difficult to read than picture books because they are longer and contain more complex vocabulary

Story language is different from daily speech and is sometimes consistent among stories (e.g. *Once upon a time*)

As indicated by the above discussion, the findings from the present study indicate that these early readers viewed reading as a problem-solving process and utilized knowledge of self, task and text to accomplish successful reading. Findings also suggest that the most fluent readers employed more metacognitive strategies, more appropriately and more flexibly, than did the least fluent readers.

Caregiver-child interactions

These children's primary caregivers had all emphasized that reading is a problem-solving process and encouraged their children to use a variety of techniques to solve problems. This encouragement appeared in the form of scaffolding (Bruner, 1975, 1978) where parents offered advice to assist their children in reading endeavours.

As one mother reminded her child, 'There's no such thing as you **can't**.' Onus was placed on children to attempt to solve difficulties before asking for help. Caregivers described how they tried not to interfere, saying 'Try it again,' before giving any on-site coaching.

Along with encouraging independent problem-solving, caregivers reported attempts to 'go with the child's common strategies' when giving specific advice in trouble situations. They understood what children were capable of doing and followed their growth and development as readers when making suggestions. One mother described how her daughter had moved from slowly sounding out unfamiliar words to relying on other strategies. 'I hardly ever ask her to sound it out [now],' she explained.

Children were also encouraged to correct the mistakes of others. One parent conducted oral 'misreadings' of texts so that her daughter would catch and correct errors. Another family was vigilant when it came to spoken grammar, and children were praised for correcting each other. Such opportunities for error detection may have created a positive emotional climate for mistakes as well as helped children to be more able to detect their own reading errors. All five children approached reading difficulties with persistence and good humour.

The children appeared to use independently the strategies suggested by caregivers during interactions regarding problem-solving in reading. Children who were most often advised to attend to grapho-phonemic information displayed a strong tendency to do so when reading independently. Children who had been directly encouraged to

Table 3. Caregiver scaffolding regarding children's attempts to solve problems during reading

Child	Caregiver's Advice	Child's Employment of Strategy
Sandi	'Read the sentence again.'	X
	'Do you know part of the word?'	X
	'Sound it out.' (less often)	X (less often)
Jan	'Sound it out.'	X
	'Look at the sentence and what would make sense?' (less often)	X (less often)
Abbey	'Sound it out.'	X
	'It rhymes with . . .'	
	'Try it again.'	X
	'How does it start out?'	
Megan	'Look for a little word inside the big word.'	X
	'Look at the . . . [configuration clues].'	X
	'Look at the . . . [ending].'	X
Lyle	* no advice generally given, relies on him to be independent	X (self-corrects or skips the word)

attend to configuration clues and rely on semantic and syntactic information did so as well. Table 3 contains a description of the strategies commonly suggested by caregivers when their children ran into trouble. It also indicates where children were seen using these strategies during oral reading sessions.

Indirect support provided by caregivers seems to have assisted these early readers in developing and using metacognitive word-identification strategies as well. All of the children had caregivers who spent time with them, playing and talking. The adults had provided rich models of oral and written language. Occasions where children self-corrected or explained a word-identification strategy in terms of grammar or syntax demonstrate that some of their developing knowledge about language was strategically applied in reading situations.

Data collection

Using a variety of methods for data collection proved helpful on a number of levels. It ensured breadth of information, eliciting description and demonstration of strategies; it also produced depth of information, allowing timely probing and repeated attention to particular strategies. In addition, validity of findings was increased when particular strategies were described or demonstrated in different contexts, a process known as the triangulation of results (Lincoln and Guba, 1985; Merriam, 1988).

Because of the preferences shown by individual children for particular methods, it seems necessary to ensure that a variety of potential methods are in place when developing a case study of this nature with young children. Four-year-old Megan, for example, was extremely reluctant to read aloud or answer questions posed by the researcher. Had interviewing been the sole method used, her profile of strategies would have been limited. Because she responded well to role playing, however,

reading aloud and answering questions was smoothly accomplished in response to the initiatives of 'Bert the Horse' – one of the puppets. Bert enticed Megan to read some of his 'favourite stories' which he was 'unable to read independently', and asked her timely questions regarding the strategies she used to identify difficult words. Because she was comfortable with his 'reading ignorance', she was quite willing to demonstrate her reading strategies by 'thinking aloud', much as a teacher might instruct an interested pupil.

Summary and implications

The findings of this study – that all five early readers treated reading as a problem-solving process and employed a variety of metacognitive strategies to ensure successful reading – have a number of implications for teachers and parents, particularly as the caregivers of the five children seem to have facilitated the development of meta-cognitive strategies through scaffolding activities as well as providing good models of language. Children need to see reading as a problem-solving process, learning strategies for solving difficulties as well as realizing the control which readers have in manipulating variables concerning self, task, and text.

In addition to supporting and extending the foundations of research regarding early reading and metacognition, the present study has built a preliminary bridge between the two areas of study. Questions which arise from this research need to be used to fuel further investigation, so that more generalizable and in-depth information can be produced.

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