Abstract:
Precocious readers are an exceptionally achieving group, constituting around one to two and a half per cent of the population (Jackson, Donaldson & Cleland, 1988). Precocious readers are identified because they read at a young age, and without formal instruction. This paper reports aspects of 11 case studies of 4-year old children with reading ages between 6 and over 12 years, from a New Zealand PhD study (Margrain, 2005). Standardised reading test results report the children’s reading ability levels, comprehension and fluency rates.

Parents of the children asserted that the children were not ‘taught’ to read; the children had effective self-regulative skills, and ‘taught themselves’. Parents also asserted that some learning was spontaneous, describing experiences of children who demonstrated rapid and unexpected acquisition of knowledge. The notion of spontaneous learning is explored through findings of the study, and is theoretically linked to Vygotsky (1962) and Piaget (1972).

Educational implications of the study relate to both the early childhood and primary school sector. Recognition of individual abilities and potential of young children is important, as is understanding of their learning process.
Background
Stainthorp and Hughes (2004) define precocious readers as “children who are able to read fluently and with understanding at an unusually young age before attending school and without having received any direct instruction in reading. Precocious readers appear to have taught themselves to read (p. 107).” This paper reports findings of a study of 11 precocious readers in New Zealand, using a mixed-method approach. The research question was How are social scaffolding and self-scaffolding demonstrated within the learning of precocious readers? However, findings showed that the approaches of social support and self-regulation did not account for all of the children’s learning; “spontaneous learning” was also asserted by parents of children in this study.

The first section of the paper summarises methodology, and the second reports some specific literacy abilities. The next sections discuss self-regulation and spontaneous learning, supported by holistic examples of learning from the study. The study shows that children had differing ways of learning: socially supported, self-regulated and spontaneous. It is important for educationalists to understand how children learn, and also to recognise giftedness and high achievement.

Methodology
The information shared in this article is drawn from a PhD study of 11 precocious readers, aged between 4:01 and 4:10 at the beginning of the study; and their parents, teachers and peers (Margrain, 2005). The study was conducted between 2000 and 2005, in children’s homes, early childhood centres and new entrant classrooms. The 11 children attended 10 different early childhood centres, including 2 Montessori centres, 6 kindergartens and 2 centres that describe themselves as “private preschools”. Four of the children were followed to school within the study, each child attending a different school. The fieldwork involved more than 120 site visits and more than 4,000 kilometres of travel.

3 Four years, one month and four years, 10 months.
Research methods included interviews with parents and teachers, observations of children’s play, and standardised tests of reading. Informal interviews with early childhood teachers, new entrant teachers, and parents were conducted throughout the study. In addition, comprehensive interviews were conducted with parents, taking 1.5 to 2 hours each, on average. Each of the children was observed at their early childhood centres on two separate occasions, for about an hour each visit. Observations focused on children’s play, social interaction, use of props and resources and communication.

Two reading tests used in the study were the *Neale Analysis of Reading* (Neale, 1999) and the *Burt Word Reading Test* (Gilmore, Croft & Reid, 1981). Each of these instruments had ceilings that were significantly above the children’s chronological age. The *Neale* provides measures of reading accuracy, comprehension and fluency levels. Two parallel forms of the *Neale* are provided, enhancing validity and reliability as all except one of the children completed both forms. The *Burt* does not measure reading in context, but instead measures *word reading* from a list. An additional instrument used was Raven’s *Coloured Progressive Matrices* (Raven, Raven, & Court, 1988). Testing was generally conducted in the children’s own homes, at times to suit the families.

Children were recruited as a result of personal contacts in early childhood education, and flyers sent to early childhood centres, kindergarten and playcentre associations, and public libraries. These approaches included over 3,500 three- and four-year-old children, from which only 16 children were referred to the study. Each of the 16 children could read beyond the age of 6 years, however only the 11 children reading beyond the age of 7 years were accepted into the study. The study reinforces the rarity of precocious reading (1-2.5%, see also Jackson, Donaldson & Cleland, 1988).

**Reading Competencies**

This section reports specific reading abilities of the 11 children who participated in my study: reading ability levels, comprehension, fluency, reading strategies, and receptive and expressive language. Children’s engagement with, and enjoyment of, reading are also discussed.
Reading ability level

The children participating in my study all had reading ability levels well in advance of their chronological age. Accuracy rates on the Neale Analysis of Reading (Neale, 1999) varied from 6:08 age equivalency for a child aged 4:07, to 10:08 for a child aged 4:09 (see Table 1). Henry read the following Level 5 passage in 89 seconds, with 110 words read correctly out of the 117 total words. The seven errors are shown in bold, with the correct word in brackets afterward.

Among animals the fox has no rival (rival) for cunning. Aspychus (suspicious) of man, who is its only natural enemy, it will, when pursshowed (pursued), perform extraordinary feats, even alighting on the backs of sheep to divert its scent. Parent foxes share the responsibilities of cub-rearing. Through their hunting expeditions they acquire an uncanny knowledge of their surroundings which they use (Repeated: ‘which they use’) in an emergency. This is well illustrated by the story of a hunted fox which led its pursers (pursuers) to a neglected (neglected) mine-shaft enclosed by a circular hedge. It appeared to surmount the barrier. The hounds followed headlong, only to fall into the indirectly (accumulated) water below. The fox, however, apparently on familiar (familiar) territory, had skirted the hedge and subsequently escaped. (H: Test Results)

Henry’s reading of the former passage, from the Neale Analysis of Reading, illustrates his competency in reading; although he made seven errors, he had an accuracy rate of 94% on this passage. Many of his errors were mispronunciations. There were many words in the passage that are not usually able to be read competently by a 4-year-old to able to competently read: “extraordinary”, “responsibilities”, “expeditions”, “knowledge”, “surroundings”, “illustrated”, “circular”, “apparently”, “territory” and “subsequently”.

Reading ability levels on the Burt Word Reading Test, which involved reading words from a list rather than in a text, were consistent with the ability levels on the Neale. For example, Gillian, aged 4:03, obtained a reading age of 6:10 on the first form on the Neale, and 6:11 on the parallel form of the Neale two weeks later. She completed the Burt between each form of the Neale, with an equivalent age band of 6:08 to 7:02 years.

Age-equivalent band scores on the Burt ranged from 6:10 to 10:06 years of age (averaged). Examples of words that children could read from the Burt are shown in Figure 1. When I asked Lewis if he knew any other words (as the manual directs) he
carefully searched then said, “Yes, New Zealand”, pointing to the fine print “New Zealand Council for Educational Research” at the foot of the form.

<table>
<thead>
<tr>
<th>Final 3 words read correctly</th>
<th>Examples of errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>A   Overwhelmed, fringe, trudging</td>
<td>Desteeny (destiny), Champion (champagne)</td>
</tr>
<tr>
<td>D   Journey, explorer, tongue</td>
<td>Bury (beware), Twist (twisted)</td>
</tr>
<tr>
<td>E   Encyclopaedia, trudging, urge</td>
<td>Pilsopher (philosopher), Re-Known (renown)</td>
</tr>
<tr>
<td>G   Luncheon, shelves, explorer</td>
<td>Emergy (emergency), Obitin (obtain)</td>
</tr>
<tr>
<td>H   Urge, binocular, economy</td>
<td>Termology (terminology), Gleyserine (glycerine)</td>
</tr>
<tr>
<td>J   Shelves, terror, urge</td>
<td>Projeking (projecting), Underversal (universal)</td>
</tr>
<tr>
<td>L   Overwhelmed, universal, destiny</td>
<td>Scarsilly (scarcely), thory (theory)</td>
</tr>
<tr>
<td>M   Explorer, events, overwhelmed</td>
<td>Norusmat (nourishment), Scarecly (scarcely)</td>
</tr>
<tr>
<td>N   Luncheon, events, emergency</td>
<td>Shivers (shelves), Believe (belief)</td>
</tr>
<tr>
<td>O   Trudging, binocular, destiny</td>
<td>Autobiography (autobiography), Contemptis (contemptuous)</td>
</tr>
</tbody>
</table>

*Figure 1. Burt Word Reading Test results.*

The consistency between reading assessment measures affirms that the children did not exclusively rely on contextual understanding when reading text. The *Burt Word Reading Test* results, being without context, appeared to confirm that they were able to draw on induced sublexical relations.

**Comprehension**

As a result of the children’s responses to comprehension questions on the *Neale* (Neale, 1999), their reading comprehension ages were between 6:03 and 8:03. Comprehension scores were slightly below the reading ability ages for the children in my research, but still well above their chronological age. For example, Erin, aged 4:07, had a reading ability of 8:01 on the first version of the *Neale*, and a comprehension level of 7:01. Although her comprehension was a year below her reading ability, it was still 2½ years above her chronological age.
Table 1

*Literacy Abilities*

<table>
<thead>
<tr>
<th>Identifier</th>
<th>A</th>
<th>D</th>
<th>E</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
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<tbody>
<tr>
<td><strong>Gender</strong></td>
<td>M</td>
<td>M</td>
<td>F</td>
<td>F</td>
<td>M</td>
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<td>F</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td><strong>Entry Age</strong></td>
<td>4:08</td>
<td>4:02</td>
<td>4:07</td>
<td>4:03</td>
<td>4:09</td>
<td>4:09</td>
<td>4:01</td>
<td>4:08</td>
<td>4:03</td>
<td>4:07</td>
<td>4:10</td>
</tr>
<tr>
<td>Neale Form 1</td>
<td>8:1</td>
<td>7:05</td>
<td>8:01</td>
<td>6:10</td>
<td>10.08</td>
<td>7:10</td>
<td>7:03</td>
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<td>Neale Form 1</td>
<td>6:11</td>
<td>6:05</td>
<td>7:01</td>
<td>6:07</td>
<td>8.03</td>
<td>7:01</td>
<td>6:09</td>
<td>6:09</td>
<td>6:07</td>
<td>6:03</td>
<td>7:01</td>
</tr>
<tr>
<td>Neale Form</td>
<td>13.0</td>
<td>8:09</td>
<td>13.0+</td>
<td>7:07</td>
<td>12.02</td>
<td>&gt;10.08</td>
<td>9.01</td>
<td>8.06</td>
<td>8.0</td>
<td>7.0</td>
<td>7:02</td>
</tr>
<tr>
<td>Neale Form 2</td>
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<td>7:09</td>
<td>8:10</td>
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<td>8:01</td>
<td>7:05</td>
<td>6:07</td>
<td>7:08</td>
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<tr>
<td>Neale Form</td>
<td>7:02</td>
<td>6:06</td>
<td>7:02</td>
<td>6:04</td>
<td>*</td>
<td>7:05</td>
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<td>6:08</td>
<td>6:06</td>
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<tr>
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<td>7:11</td>
<td>13.01+</td>
<td>9.0</td>
<td>*</td>
<td>10.03</td>
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<td>Form 1</td>
<td>Form 2</td>
<td>Form 1</td>
<td>Form 2</td>
</tr>
<tr>
<td><strong>Burt Word</strong></td>
<td>8:01-8:07</td>
<td>7:05-7:11</td>
<td>8:03-8:07</td>
<td>6:08-7:02</td>
<td>10:04-10:10</td>
<td>7:06-8:00</td>
<td>7:09-8:03</td>
<td>8:00-8:06</td>
<td>6:11-7:05</td>
<td>6:11-7:05</td>
<td>8:10-9:04</td>
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<tr>
<td><strong>BPVS age equivalent</strong></td>
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<td>4:07</td>
<td>5:05</td>
<td>4:07</td>
<td>8:04</td>
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<td>5:07</td>
<td>6:02</td>
<td>5:11</td>
<td>5:08</td>
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<tr>
<td><strong>BPVS</strong></td>
<td>82</td>
<td>58</td>
<td>66</td>
<td>58</td>
<td>99</td>
<td>91</td>
<td>80</td>
<td>72</td>
<td>91</td>
<td>84</td>
<td>74</td>
</tr>
</tbody>
</table>

*(Neale = Neale Analysis of Reading, Burt = Burt Word Reading Test, BPVS = Burt Word Reading Test)  * Refused to read
The comprehension scores are important because many teachers have expressed their concern about “allowing” young children to read beyond their chronological age in case the children do not “really” understand what they are reading. The results from my research clearly show that all of the children had comprehension levels well above their chronological age. They could read, understood what they read, and wanted to read. There is no evidence to explain why they should be “held back” or denied access to ability-level literature, provided it is age-suitable (Hartley, 1996). Julia was reading plays and novels in her free time. Her mother knew that her daughter had understood them because of the way she could discuss issues from the characters’ perspectives. Aged 4:01, if Julia had been restricted to age-level reading material, she would have had to wait another year before being allowed to read emergent texts.

Parents were aware that comprehension was important. They were sure that their children had good understanding, and most parents enjoyed discussing books with their children.

We explain the meaning of words sometimes. Someone told me quite early on you have to watch comprehension, so we always make sure he understands (H: Parent interview, D2).

sort of hard to as they [early childhood teachers] were sending home books like ‘this is a cat, this is a dog’. It was quite a fight to get her books at her level. They felt her comprehension was low, but I think she didn’t know what they wanted. She would say “I don’t know”. She does understand – she can see from the picture even if she has not put the words into place. I have talked with her – she knows what the character is feeling etc. Also, she’ll be sitting in bed laughing, getting that from the text, getting feelings, humour, understanding (G: Parent interview, p. 6).

Fluency

A key finding from the *Neale Analysis of Reading* was clear confirmation of the children’s reading fluency. Every child who participated in the study had a fluency rate significantly above their chronological age, and most of the children had fluency rates well above their reading ability rates. For example, Erin had a chronological age of 4:07, a reading ability level above 8 years on the two forms of the *Neale*, and a fluency rate above 13 years equivalency. Similarly, Julia had a chronological age of 4:01, reading ability around 7 ½ years and fluency rates of 9:01 and 12:03 on each form of the *Neale*. 
Children also read words on the *Burt* assessment rapidly, so their reading was rapid whether words were in text or in isolation. The children participating in my study did not appear to ‘decode’ in terms of breaking down a word into “chunks”; instead, they simply “said” the word, even when incorrect. An example is the word “philosopher”. Many readers would break this word down to fi/lo/so/fer, but the way Oscar read this word was to rapidly say the ‘whole word’, he said ‘polsofer’; although incorrect it was read smoothly. Erin similarly read “filsofer” and Henry read ‘feelosofer’ rapidly as single words, without sounding out in chunks.

Parents and teachers validated that their children normally read rapidly.

She’s galloping … gobbling up her book like eating very fast. I tell her it helps her to space, help her to breathe. (G: Parent interview, p. 7)

The teachers told me that he devoured books, for example reading all of their new library collection in a single morning. (M: field notes, p. 4)

Erin’s mother commented that Erin didn’t like her mother reading to her anymore, because she read too slowly, and Erin could read faster herself. The fluency of children’s reading in my research supports other research on precocious readers fluency therefore is a key indicator of precocious reading (Jackson & Klein, 1997; Jackson & Roller, 1993).

**Reading strategies**

Analysis of errors from the *Neale* indicates that almost half of all errors were mispronunciations and a third of errors were substitutions. Few errors were refusals, additions or omissions, and none were reversals. The use of mispronunciations and substitutions fits with the fluency of children’s reading; they rarely faltered.

Children’s reading of passages on the *Neale* were analysed according to meaning, structure and visual cues, using *Reading Recovery* procedures (Clay, 1993). At “easy” and “difficult” levels, the most frequent cue source used at error and self correction was visual. Structure was the most frequent cue source at instructional level (90-95% accuracy), and the second most frequent cue source overall at error. Meaning and visual cues were evenly the most frequent cue source at instructional level, and meaning was the second most frequent cue source at self-correction.
Self-corrections were made at all levels, on at least 40% of passages. On average, errors were self-corrected once every 2.8 errors at easy level, once every 3.5 errors at instructional level and once every 7.8 errors at difficult level. This analysis shows that children utilised a broad repertoire of reading strategies, self-monitoring and self-correction, and sustained the use of strategies at difficulty.

**Language**

All of the children participating in the study scored above their chronological age on the *British Picture Vocabulary Scale*, which assesses receptive language. However, not all of the children scored significantly above their age; four children were within 1 year of their chronological age, and an additional six children within 2 years of their chronological age (see Table 1). Only one child scored exceptionally, achieving the 99th percentile. Henry was able to identify the correct pictures for the following words: “collision”, “resuscitation”, “hoisting”, “isolation”, “syringe”, “dilapidated”, “departing”, “quartet” and “feline”. In addition to the formal aspect of the assessment, children made anecdotal comments that affirmed their understanding. After correctly identifying “weasel”, Isla commented “like a meerkat”. Interest in dinosaurs influenced two children’s comments: after reading “swamp”, Henry commented “Brachiosaurus lived in a swamp”, and after reading “claw”, Nathan commented “like a raptor claw”.

Examples of expressive language were extracted from observations of children at play, particularly in early childhood centres. A purpose influencing this approach was to see if the expressive language of the children participating in my research was remarkable in terms of vocabulary or sentence length. The information gathered does not appear to support this hypothesis; rather the children appeared to use language that matched their social context and peers. When children did use advanced language skills they tended to be ostracised socially by their peers.

**Passionate, engaged readers**

Parents affirmed that the children read with fervour, enthusiasm and delight. Comments from Erin, Henry, Matthew and Oscar’s families illustrate their

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4 Presumably the dinosaur species ‘Velociraptor’
engagement, for example, referring to “love of reading” and “devouring books”. The following responses are examples of replies to the parent interview question “How does [your child] feel about reading?”

Father: I think he loves it.
Mother: He loves it so much that it comes before socializing.
Father: Or eating.
Mother: He reads first at kindy, then he plays.
Father: He's obsessed with it – when he's satisfied, then he plays. (H: Parent interview, p. 9).

Really interested, feels confident in himself that he's able to read. Feels capable, really happy he's able to read – maybe a sense of achievement (M: Parent interview, p. 9).

She loves it, really enjoys it. By wanting to read, by doing it. We see her laughing in bed. (G: Parent interview, p. 9)

She loves reading. She's continually got her nose in a book. (E: Parent interview, p. 7)

Father: He loves it
Mother: Yep. He's seldom seen without a book. (O: Parent interview, p. 9)

He loves it. (N: Parent interview, p. 8).

Parents also referred to their children’s engagement with reading at other points throughout the interviews. They linked this to a desire and ‘thirst’ for learning.

He enjoys it a heck of a lot. There is no way he’d do this much if he didn’t enjoy it. It's just something he does. Wandering around the supermarket shelves reading etcetera. (A: Parent interview, p. 10)

At the [bookshop], [he would read for] 2 ½ hours there. When I was there for 3 hours he’d only get bored in the last half hour. (Henry, Parent Interview, p. 6)

The teachers told me that he devoured books, for example reading all of their new library collection in a single morning. (M: Fieldnotes, p. 4)

He’s seldom seen without a book ... he’s always got a book. (O: Parent Interview, p. 9)

The repeated references to children’s enjoyment of reading are consistent with previous research on precocious reading and affirm that reading was the children’s choice, rather than something imposed on them.

**Self-Regulated Learning**

The children participating in this study had strong self-regulatory and, self-management skills. The section begins by discussing links with the zone of executive functioning, and then considers aspects of self-regulation, including logical problem-solving, self-concept, memory and motivation.
A discussion of self-regulation is important because social environments and individual cognition are linked through the process of learner internalisation (Rohrkemper, 1989). Bruner (1988) notes “the existence of a crucial match between a support system in the social environment and an acquisition process in the learner” (p. 93). Viewing self-regulation as a process rather than a concrete skill relates to individual empowerment (Rohrkemper, 1989). Self-regulation necessitates competence with cognitive and metacognitive sub-skills, but, as a general concept, it relates to internalisation and engagement (McCombs, 1989; Rohrkemper, 1989; Zimmerman, 1989, 1994). The importance of self-regulation is that individuals are not merely replicating taught behaviours, but are able to show “adaptive learning – the facility to take charge of one’s self and one’s learning” (Rohrkemper, 1989, p. 148). Self-regulated learners can be distinguished from other learners through “their perception of academic learning as something they do for themselves rather than something that is done to or for them. They . . . become controllers rather than victims of their learning experiences” (Zimmerman, 1998, p. 1). Ridley (1991) asserts that antecedent attitudes, intentions and goals are as important as observations of behaviour in developing an accurate picture of self-regulatory capacity.

An important component of self-regulation is the notion that learners actively play a role in their own learning. Ridley (1991) refers to self-regulation as “the extent to which the student is an active agent in his or her own learning process cognitively, motivationally and behaviorally” (p. 32). It is also viewed as “an ongoing interactive process” (Ridley 1991, p. 34). The notion of active participation links to McCombs’ (1989) phenomenological examination of the role of the “self” in self-regulation. Corno (1989) similarly considers that a definition of self-regulated learning needs to include “an effort put forth by students” (p. 111). This was illustrated by the reporting of the parents of precocious readers that their children “took the lead”.

In describing “active learners”, Stuart McNaughton (1995) refers to their actions as strategic (adaptable and flexible), regulated (controlled) and knowledgeable. The concept of self-regulated learning presented in this review is broad enough not to be seen merely as part of the function of being an “active learner”, but synonymous with it. Elsewhere in contemporary research, similar perspectives of the active, skilled and
empowered learner describe “strategic learners” (Cullen, 1998) and “the autonomous learner” (Betts, 1985, 1992).

Schunk (1989) defined self-regulated learning as “learning that occurs from students’ self-generated behaviors systematically oriented toward the attainment of their learning goals. Self-regulated learning processes involve goal-directed cognitive activities that students instigate, modify and sustain” (p. 84). Biemiller, Shany, Inglis and Meichenbaum (1998) propose that “it may be only rarely that children under 4 or 5 years of age will be able to truly self-regulate activity” (p. 209). Children participating in this study link to the description of self-regulation provided by Paris and Byrnes (1989) who state, “Some students thirst for learning. They seek challenges and overcome obstacles sometimes with persistence and sometimes with inventive problem solving. They set realistic goals and utilize a battery of resources. They approach academic tasks with confidence and purpose” (p. 169). Parents of children in this study highlighted issues of challenge and competition. In part this was seen as intellectual challenge – to avoid getting bored, and at times this was about achievement: being “a winner”. Often children’s own motivational desire for learning and personal achievement led to a demand to be taught. Children’s learning disposition of internal control shaped their learning potential, driving them to achieve to their potential. Several parents of children highlighted a specific focus on self-teaching, and credit was given to the participating children themselves as being their own lead teachers. When asked “Who is it, if anyone, who has mainly taught your child?” Henry’s parents stated, “Henry” (H: Parent interview, p7).

- She taught herself, that's the amazing thing. (G: Parent interview, p. 6)
- Reading – she sussed that one out. (E: Parent interview, p. 5)
- Mostly he's a self-starter – we try to keep up with him. (H: Parent interview, p. 7)

Zone of executive functioning: ‘A way of analysing what the problem is’

The zone of executive functioning (ZEF) focuses on independent, child-centred factors, due to the withdrawal of the scaffolding support from the Zone of Proximal Development (Berk & Winsler, 1995). The ZEF appears to link with research literature relating to metacognitive thinking and reflection, self-teaching and self-evaluation. In this study, many examples were provided of children’s systematic or
metacognitive thinking. Nathan’s mother noted that he had a strong sense of how things “should” be. Children combined systematic and analytical approaches to learning with questioning, reflection and memory.

He has a way of analysing what the problem is – probably putting a grown-up context onto it. He has the ability to think a problem through and think of a way to fix it. I never thought about it [before]. A very quick learner. (D: Parent interview, p. 3)

He sits and looks a long time first, then gets it right when he tries. He’s pretty successful, whether riding a trike or whatever – I don’t see that he gets it wrong. (A: Parent interview, p. 2)

Several parents of children participating in this study highlighted a specific focus on self-teaching. The children were perceived to “teach themselves” more than they were “taught” by others. When asked “Who is it, if anyone, who has mainly taught your child?” – Henry’s parents emphatically stated “Henry!” (H: Parent interview, p7).

She taught herself, that's the amazing thing. (G: Parent interview, p. 6)

Reading – she sussed that one out. (E: Parent interview, p. 5)

Mostly he's a self-starter – we try to keep up with him. (H: Parent interview, p. 7)

Although all young children learn “actively”, some children are more focused, independent and knowledgeable (Kanevsky, 1992). Many of the children in Clark’s (1982) study of precocious readers “seemed well able to absorb themselves in activities with a high level of concentration . . . were self-sufficient enough to occupy themselves . . . [and were] described as “tending to do things on their own” by parents and teachers (p. 42).

Children in this study made comments that evaluated their task completion and showed awareness of the upper limits of their ability, knowing when they were getting something “wrong”. They also appeared to enjoy a challenge, not wanting experiences that were too easy. This implies that the children in this study had awareness of their own zone of proximal development (Vygotsky, 1978) and were thus able to operate in the ZEF. The children were able to self-assess their own achievement. Gillian had drawn some hearts on her work, and was proud of having learnt to draw them recently. She pointed to them, explaining “These ones are good one, and these one are not very good” (G: field notes, p. 4).
Children showed self-reflection as they read. Isla was aware when words became too difficult for her on a reading assessment, saying, “I don’t know these words”. Her comments coincided with the point at which she did begin to make errors. At the exact point the test procedures suggested I should ask her to stop, she emphatically stated, “That’s all”, indicating she wished to finish the task (I: field notes, p. 2).

Gillian also appeared to know the precise accurate level of her reading ability. At the third reading passage, she stated, “My energy’s gone away now” (G: Field notes). Half way through the last set of comprehension questions, at the level appropriate for ending assessment, David similarly stated, “I think I’ve done enough reading now, thank you!”

*Logical problem-solving*

Children commented that they enjoyed completing puzzles and problem-solving challenges. They were enthusiastic about the two forms of puzzle included in the study: the standardised *Coloured Progressive Matrices* (*CPM*) and the informal use of three-dimensional puzzles. I had offered children the opportunity to try a three-dimensional puzzle to provide variety amongst the activities tasks children completed with me. The puzzle was also carefully chosen to be within where I predicted the children’s zone of proximal development to be. No children were able to complete the puzzle independently, but all were able to complete the puzzle when supported. On the puzzle activity, children were engaged and persistent. *CPM* norms used were from Great Britain, for children aged 5:03 to 5:08; the highest percentile band on these norms is above the 95th percentile. Seven of the 11 children scored at or above the 95th percentile. Only one child scored poorly.

Some of the school teachers shared maths assessment that they had taken during the children’s first weeks at school. David’s assessments showed that he could round numbers to the nearest 10 (for example, 88 rounded to 90, 51 rounded to 50), use ordinal numbers (for example, to identify the fifth number from a list), and use the symbols <, > and = correctly.

He asks a lot of questions – not always at reading, at other times. Even when we drive the car he will ask about what he’s read. (H: Parent interview, p. 11)
An avid puzzler. I buy hard puzzles – 50 pieces and up. David will figure it out before the end of the day. On Saturday morning he’ll be sitting with the puzzle going over and over it. (D: parent interview, B2, p. 3)

He could count very early. He recognised the alphabet letters very early too. (N: parent interview, C10, p. 5)

Her number knowledge is fantastic . . . she didn’t appear to be processing, she didn’t want to work it out, just said it . . . She’s quite a bright little button, full stop. (G: school 2, p. 1)

The problem-solving and math results show that although many of the children scored highly, they were not all exceptionally high. This illustrates that precocious reading ability does not necessarily mean that the children were gifted in areas other than reading. Nevertheless, children’s comments during their completion of both the CPM and the 3D puzzle illustrate that they enjoyed challenges and new experiences. Their body language and sustained focus also reinforce this broader interest in learning, which is supported by the fact that all the children completed the CPM or asked to continue using the 3D puzzle. A qualitative perspective values data which affirms the children as “interested learners” as strongly as formal results of the problem-solving assessment.

**Self-concept: “I’m a good reader”**

Children’s self-descriptions also illustrated an awareness of their own abilities. David’s mother told me that he had said “I’m brilliant”, referring to himself (D: parent interview, p. 5). Alistair’s teachers noted that “He has commented he is clever” (A: field notes, p. 5). When I asked Oscar’s parents how he saw himself as a reader, they stated:

Oscar’s father: He knows he’s good  
Oscar’s mother: He doesn’t show off – he’s not one for bringing attention to himself  
Oscar’s father: He will sometimes say, ‘I’m a good reader . . . always known he’s good’. (N: parent interview, p. 13)

An additional behaviour relevant to this section pertains to children’s comparison of themselves with others. This is a form of comparative self-evaluation. Comments ranged from tentative awareness of others through to strong awareness. The following comments are responses to the interview question: “How do you think [your child] sees him/herself as a reader?”

Not sure if he recognizes the fact that he’s young to read, though … I think he knows that what [he’s] doing is for a 5-year-old. Confident, has ability. (M: parent interview, p. 10)
He knows he’s good. He knows his friends can’t do it. He doesn’t boast or tease. I’ve talked to him about when God created him, he gave him a special gift – he does understand that. (H: parent interview, p. 11)

He thinks he’s a good reader, a great reader. He knows he’s special. He says that as well, knows he's special. He knows he’s smart for a 4-year-old, sometimes acts it out. Can be too smart at times. He’s not cheeky, but can rub it in, rub it in to [his sister]. (D: Parent interview)

Not all children engaged in comparisons with others. When asked the same interview question “How do you think [your child] sees him/herself as a reader?” several parents commented that children reflected on their own achievement and progress:

I don’t think she compares herself with anyone as such. I never heard herself say that to me. She has told me that she’s in the purple level and is happy to be in that level, but has never talked about other children. (J: parent interview, p. 8)

She doesn’t see herself in any particular way. I don’t think she sees herself as any more capable. I don’t think she sees herself as any more capable [original repetition]. It’s still that way. It’s something she has always been able to do; she probably thinks everyone should be able to read that way. (E: parent interview, p. 9)

Normal. I don’t know that she’s aware she’s brilliant . . . She enjoys it. She’s happy with being able to read. It’s just another something she’s able to do. (G: parent interview, p. 9)

Research from Chapman and Tunmer (2002) linked self-concept and reading ability. Although formal measures of self-concept were not undertaken in this study, during many discussions with parents and teachers there did not appear to be any evidence of low self-concept. It is not possible to ascertain whether early reading ability caused or completed strong self-concept, but it is likely that by the time children joined the study, the ‘reciprocal boot strap affect’ applied to both ability and self-concept owing to the reinforcing experience of ongoing success (Stanovich, 1986).

Memory: ‘Like a sponge’

Parents of children participating in this study noted their children’s inquisitive nature and thirst for knowledge. The analogy of being a ‘sponge’ was repeatedly used as the children ‘soaked up’ all that they could from their environment. When I visited Henry’s school, the teacher said to me “he’s such a sponge” (H: School1).

He learns from everywhere. Comes home with things from other kids’ houses, TV, books, phrases from the computer. The ‘sponge analogy’ – learns from everywhere. (A: Parent interview, p. 10)

It put me off when he wanted encyclopaedias read. He likes picturepaedia. He likes things with facts more than stories, like a sponge, wants to learn things. (O: Parent interview, p. 8)
It does not even seem like Matthew is learning. Yet he is constantly absorbing information and remembers them in context, and that is just amazing. (M: Parent interview)

As well as absorbing information ‘like a sponge’, children were also reported to have excellent memory skills. They learnt quickly and retained their knowledge. Perez, Peynircioglu and Blaxton (1998) noted that learning strategies could be secure at a young age. While conceptual explicit memory performance improved with age, certain forms of memory performance were not affected by age. The results suggest that the processes that guide performance on both perceptual implicit and perceptual explicit tasks as well as on conceptual implicit memory tasks appear to be fully functional at an early age” (p. 183).

Just really quick in grasping anything. Anything you teach her once or twice she gets it. At the [early childhood] parent-teacher meeting the teacher confirmed it – she grasps things very quickly. (J: Parent interview, p. 3)

He has a very good memory . . . he really could remember it - he had that retention of his memory. (L: Parent interview, p. 7)

Because they're born with three trillion brain cells, the more you use the more you retain. I don’t believe it’s an overload to inform them if they ask, give the answer. It’s difficult to see what their world is going to be like when they are adults. I hope they’ll be able to cope with the complications that will be there at the time and still be happy and successful. (H: Parent interview, p. 11)

Memory is important because understanding of children’s learning necessarily involves more than one perspective. The social constructivist perspective highlights the role of parents and other involved people who support children to develop their growing memory-use skills. Cognitive constructivist and information processing perspectives acknowledge the role of the individual in developing and using memory-use strategies (Hulme & Roodenrys, 1995). The bio-ecological model (Roskos, 2000) also acknowledges innate and potential capabilities of individuals. The parents’ reference to children learning ‘like a sponge’ acknowledges the role of the individual child. No matter how much information is provided to children, whether they learn is influenced by their thirst for learning, and how willing and able they are to absorb new knowledge.

Motivation: “Pleasure from completing something”

Oldfather and Wigfield (1996) make the unsurprising research conclusion that “when children believe they are competent and efficacious at reading, they should be more
likely to engage in reading” (p. 91). It is also unsurprising that parents of the precocious readers in my research frequently pointed out that their children engaged with reading because they personally enjoyed it; if they had not sustained self-motivation to read, then they would not have gained the reading experience that they had. These aspects relate to Margaret Carr’s (2001) work on dispositions, for example motivation and engagement connect to the disposition of “persistence”.

Csikszentmihalyi (1978) links engagement with “emergent motivation” through the learner becoming caught up in the activity. In terms of reading this is demonstrated when by children lose track of time and becoming immersed in reading, thus demonstrating what Csikszentmihalyi describes as the “flow experience”. Oldfather and Wigfield (1996) extend the concept of engagement with their construct of the “continuing impulse to learn . . . characterized by intense involvement, curiosity, and a search for understanding, as the learner experiences learning as a deeply personal and continuing agenda” (p. 94). The children participating in this study clearly had a strong continuing internal impulse to learn.

She feels pleasure from completing something. (G: parent interview, p. 3)

It all comes from her. (I: parent interview, p. 4)

If he wants to [do something], he’ll just do it. If we want him to – nothing [will motivate him]. (O: Parent interview, p. 3)

David’s mother: If it’s something he’s interested in . . .
David’s father: Yes, that’s the key. If he’s not interested then he’ll go so far then not bother. (D: Parent interview, p. 3)

She’s always been a very independent child, from 2, 2 and a half. [Her sister] is the other way around – needs us around. Julia doesn’t need us around – she’ll find something to do, and does it. Self-motivated I think. [Her father] is a lot like her. (J: parent interview, p. 2)

Csikszentmihalyi (1990) noted that the “flow experience” is impeded if there is a mismatch between skills and opportunities for challenge. In my study, parents affirmed the necessity of an appropriate level of challenge for children. David’s mother stated, “He is frustrated at preschool now, and ready to move into the next level, he can do that level. He could do it now, wish he could” (D: field notes, p. 3). Once David was aware of how to do the three dimensional puzzle that I brought with me, he asked to do it again, completing it on the second attempt within about a minute. He clearly wanted to achieve completion of the activity (D: field notes, p. 5).
At the teacher interview she showed us an example of his work: /h/ hat. He never got around to cutting it out, couldn't see the reason for doing it. (O: Parent interview, p. 4)

Many of the children responded well to challenges provided within competition; parents did not see challenge and competition as negative. Isla, for example, “loves competitive games” (I: Parent interview).

More simply, McNabb (1997) states, “the concept of motivation is understood by researchers, educators, and lay people as the difference between potential and performance” (p. 408). Precocious readers were clearly uninhibited in their early reading performance, which allowed them to extend their literacy skills and potential. A pertinent consideration is whether the children are able to maintain motivation for optimum performance, or whether they focus on fitting in – even if this means sacrificing their potential. The data shared thus far from this study suggests that some highly achieving children prioritise social acceptance over performance to their achievement potential.

One of Oscar’s parents noted that it was the process of learning rather than specific knowledge that inspired him, saying “I think he likes the thought of something new” (O: Parent interview, p. 9). Henry was broadly and deeply curious. For example, he extended the stimulus of a group sea mural to being curious about Antarctic cod: could they have fur to keep warm he wondered? He suggested that the people at Scott Base would know about Antarctic cod and animatedly discussed his ideas about how to contact Scott Base with a teacher while painting blue waves alongside other children.

**Perfection vs perseverance**

Parents commented on children’s perseverance and perfectionism. Although some children demonstrated attributes of perfectionism and frustration, most children participating in my study displayed attributes of diligence, determination, concentration and perseverance with tasks.

He worked diligently and wanted to be successful. (M: Parent interview, p. 2)

His perseverance with activities like the computer. (M: Field notes, p. 3)

The teacher at her previous preschool said she [Gillian] would concentrate enough to see it through to the end . . . The teacher commented that some other children gave
up when puzzles were difficult . . . . She has a longer attention span than most children. (G: Parent interview, p. 3)

When asked how Nathan attempted new tasks, his parents replied:

Nathan's father: Usually with grim determination.
Nathan's mother: He'll have a go. Has pretty good patience for a little child, his frustration point is quite high.
Nathan's father: When he was 2 he used to spend a long time doing jigsaws and not get frustrated. (N: Parent interview, p. 2)

Although persevering was more often described, there were some references to perfectionism. Perhaps because the participating children had experienced significant academic success, a tendency toward perfectionism was apparent in a few instances. When completing the interview checklist, Erin’s mother paused at the statement ‘Anxious about perfect work’, then emphatically stated ‘YES!’ Children may have been used to achieving well and expected to do so consistently. Some children became frustrated when their own standards were not met:

She gets frustrated at times. She’ll try two or three times, then gets frustrated. She likes things to come to her quite easily. A bit difficult. I remember when she was a small baby she did everything early. You know – they roll over and then sit up – she just sat up. (J: Parent interview, p. 2)

David doesn’t like being told what to do at times . . . David doesn’t like to make a mistake. Gets cross if told he’s wrong … Not keen to take risks. (D: School 1, p. 5)
He is not a big risk-taker – needs to be 100%. (D: School 2, p. 2)

Needs to be challenged – David and [his sister] need to have something to challenge them. (D: Parent interview, p. 4)

He is motivated by the challenge, the race. Likes competition – getting into the car first, getting the car seat belt on . . . (O: Parent interview, p. 3)

My name is David. I am in [name of school house]. I want to be first [story by David on wall at school]. (D: School 2, p. 1)

I think she has to do it; she has to get it done. (J: Parent interview)

**Spontaneous Learning**

This section discusses learning that cannot be accounted for through social scaffolding or metacognitive self-scaffolding. Spontaneous learning implies a rapid and unexpected acquisition of knowledge; it does not mean to suggest that the learning “comes from nowhere”. After reading excerpts from the posthumous publication of Vygotsky’s *Thought and Language*, Piaget (1962) responded,

In all of my pedagogical writings, old [*Encyclopédie française*, article *Éducation nouvelle*] or recent, [*Le Droit à l’Éducation* dans la collection *des Droits de l’homme*, UNESCO] I have, on the contrary, insisted that formal education could gain a great deal, much more than ordinary
methods do at present, from a systematic utilization of the child’s spontaneous mental
development . . . it should be clear that to my mind it is not the child that should be blamed for
the eventual conflicts, but the school, unaware as it is of the use it could make of the child’s
spontaneous development, which it should reinforce by adequate methods instead of inhibiting
it as it often does.

The second problem, which is really an extension of the first on a more general level,
is the relation between spontaneous concepts and scientific notions as such. In
Vygotsky’s system, the “key” to this problem is that “scientific and spontaneous
concepts start from different points but eventually meet.” On this point we are in
complete accord, if he means that a true meeting takes place between the
sociogenesis of scientific notions (in the history of science and in the transmission of
knowledge from one generation to the next) and the psychogenesis of “spontaneous”
structures (influenced, to be sure, by interaction with the social, familial, scholastic,
etc., milieu), and not simply that psychogenesis is entirely determined by the
historical and the ambient culture. I think that in putting it thus I am not making
Vygotsky say more than he did, since he admits the part of spontaneity in
development. It remains to determine wherein that part consists.

The concept of spontaneous learning appears to be an area within which Vygotsky
and Piaget were in agreement, with Vygotsky (1962) stating, “Piaget’s
classification of the child’s spontaneous concepts as nonconscious and
nonsystematic tends to confirm our thesis” (p. 92). Vygotsky (1962) suggests that
“spontaneous” concepts may originate from a situation or event, but the child is not
consciously attending to the concept; on the other hand, “scientific” concepts may be
overtly mediated and require conscious reflection. Psychological abilities of
precocious readers extend the influence of socially constructed learning experiences
and environment. At the first annual symposium of the Jean Piaget Society, Piaget
himself commented,

The title “Equilibrium” refers to one factor that I think is essential in cognitive development.
In order to understand the role of this factor we must relate it to the classical factors that have
always been understood to be pertinent in cognitive development. There are three such
classical factors: (1) the influences of the physical environment, the external experience of
objects; (2) innateness, the hereditary program; and , (3) social transmission, the effects of
social influences. It is clear that all three are important in cognitive development. (Piaget,
1972a, p. 1)

Spontaneous learning acknowledges that psychological abilities of children include
use of strategies and discovery of strategies (Siegler, 1991). When testing memory
performance, Perez, Peynircioğlu and Blaxton (1998) found that explicit memory
performance improves with age, but implicit learning abilities were available at a
young age, with little difference between preschoolers, elementary school children
and adults. Ehri (1991) also discounted memory as a plausible explanation for
literacy competence. Experiments demonstrated that where analogy and processing of
contextual cues could be discounted, “spontaneous induction may be demonstrated by
default” (p. 384). This study of precocious readers will consider implicit learning of the participating children.

Torrey (1979) described spontaneous reading as reading that “comes naturally”.

Smith and Elley (1997) confirm that ‘we also know that it is possible for readers to go directly from print to meaning, without lessons on sounding out’ (p. 143). Thompson, Cottrell and Fletcher-Flinn (1996) explain the implicit processes:

As the reader’s stored print word experience changes, the sublexical relations expand. Induction of these relations will be updated continuously and spontaneously by the reader and stored in the updated form. While the information for all the simple independent grapheme-phoneme correspondences can be provided through direct teaching, this is not the case for sublexical relations. It would be implausible for a teacher to point out all such relations for each new word as it is acquired. While the large number of interrelationships is within the capacity of nonconscious processing, the explicit attention to all of them would be overwhelming for both teacher and child. (p. 194)

Thompson and Fletcher-Flinn’s work with precocious readers has supported their “Knowledge Sources” theory of literacy acquisition (Thompson & Fletcher-Flinn, 1993). According to Thompson (1999), precocious readers rarely attempt overt “sounding out” of words. Instead, they utilised an implicit mechanism of phonological recoding. Induced sublexical relations (ISRs) are implicitly formed as a result of the child’s accumulating reading vocabulary “which means that the child is largely unaware that the learning is occurring” (Thompson, 1999, p. 31).

Induced sublexical relations (ISRs) provide one type of phonological recoding; an application of implicit knowledge of the alphabetic principle. ISRs comprise relations between orthographic components of words and corresponding phonological components in memory which the child learns largely implicitly and hence unconsciously. These relations are common to print words which have become part of the child’s reading vocabulary” - the child unconsciously induces implicit knowledge (p. 13). “Unlike taught sounds for letters, it is clear that most of the induced sublexical relations cannot be directly taught. There are too many and some are too complex for that. Most are acquired through the nonconscious processing that constitutes implicit learning (p. 29).

Thompson’s model illustrating the difference between the knowledge source theory and other forms of learning to read (Thompson, Fletcher-Flinn & Margrain, 2002, p. 2) is illustrated in Figure 2. Thompson’s model applies specifically to learning to read. In this study, I consider whether the model is applicable more broadly. For example, Göncü and Katsarou (2000), and Neuman and Roskos (1989) discuss the concept of “spontaneous play”.

Theories of learning to read:

- Share (1995): (a) \(\rightarrow\) (b)
  
  (a) is necessary

- Thompson ('93, '99), Thompson et al. ('98, '90), Knowledge Sources theory
  
  (a) is optional

Figure 2. Knowledge sources theory: A comparison by Thompson (2002).

Thompson (1999) also acknowledges the critical role of the individual within literacy learning, stating that repeated associations with print are necessary, and “may be provided by teachers, peers or parents, or self-generated by the child” (p. 28, italics added). Thompson (1999) further discusses “self-teaching” of reading vocabulary and untaught instances of the alphabetic principle (p. 30). Thompson’s research highlights the connection between metacognitive abilities and precocious reading. The results of my study affirm individual thinking and cognitive abilities and “self-teaching” and “self-generation” characteristics in precocious readers.

Parents in this study perceived that the learning of children participating in this study to be “instantaneous”, and they described a different concept from the zone of proximal development and the zone of executive functioning. A key difference is one of rapidity: a “flash” of inspiration or a “moment” of intuition are terms we use in discussing learning. This view links to the differentiated giftedness-talent model of Gagne, which recognises the importance of a learning “catalyst” (1985, 1991), that the catalyst will often be external, but that receptivity to the catalyst is within the learner. Spontaneous learning can also be linked to independent and non-conscious learning acquisition, described by Lewicki, Hill and Czyzewska (1992), and to the work of Walters and Gardner (1986), who refer to a “crystallizing experience”. Crystallizing experiences are not “sufficient for ultimate achievement”, but can, when timely, prove to be powerful (Gardner, 1986). The experiences of the children in this study illustrate that it is the individual’s receptivity rather than the experience that is ultimately decisive. Inagaki, Hatano & Inagaki (1992) notes the ability of young
children to make spontaneous developmental gains, and discuss children’s “genetic predisposition” for learning.

*Microsoft Thesaurus* [Microsoft Word Thesaurus, Version 2002] provides three relevant definitions for induction: reasoning, making electricity, and initiation. These definitions link to this study in the following ways:

- Although spontaneous learning differs from ZEF/metacognitive reasoning, it does involve reason in terms of intelligence and understanding.
- The electrical analogy of a ‘spark’ or ‘bolt of lightening’ describes the spontaneous learning catalyst.
- Initiation acknowledges the learner rather than the teacher.

In this study, many parents referred to their children’s implicit and intuitive understandings as “spontaneous learning. Sometimes parents referred to children’s “teaching themselves”, but clarified that “it just happened” or was “natural”. It therefore appeared that children’s learning was not always taught, not always metacognitive, and sometimes spontaneous.

A little concerned at the fuss everyone was making over his reading – it is just something that happened and no big deal . . . spontaneous. (A: field notes, p. 1)

Other parents affirmed that the learning “just happened”, rather than appearing to progress through stages. Erin’s mother described to me her opinion that she viewed Erin’s reading was something that had ‘just happened’, and that Erin had ownership of it (Field notes). David’s parents commented that he had learnt to read “overnight”. One possible reason for this impression is that the children had flashes of understanding and awareness – “like a switch turned on”. Another possibility is that the children were progressing so rapidly that it was impossible to tell if they were passing through stages or leaping them.

One day he couldn’t read, the next he could. (D: field notes, p. 3)

It may be compressed in my memory, but it seemed to go quickly from knowing names and knowing sounds to being able to attempt words – all within a span of 3 months. (H: parent interview, p. 6)

She’s one of those kids that things happen so rapidly through the stages that you just about miss it. (E: Parent interview, p. 5)
The rapidity with which the children learned to read differs from most children’s literacy learning experience and is a key point to acknowledge. The assertion that children learnt to read without direct teaching from adults (either parents or teachers) is critical to highlight before the next section, which discusses literacy interactions between adults and children. Parents acknowledged that experiences and support are important, but factors that are generated from the child are most influential in the development of precocious reading ability.

Isla revealed she could read just before 3 years when she took a cereal packet out of the cupboard and began to perfectly read what was written on the side – I couldn’t believe my ears. [The packet text] included the word ‘fantastic’. (I: Parent interview)

Several of the children were not aware that other children couldn’t read; they thought that everyone “just could” read. Oscar would not have been able to articulate all of his computer skills, or describe the skills that he had not yet mastered, he simply used (and explored) the computer.

Children autonomously create and capitalise on opportunities to learn. Co-construction describes a process of shared understandings and interaction that acknowledges the important role of the learner (Jordan, 2003; McNaughton, 1995; Rogoff, 1998). However, co-constructive perspectives may also imply that learning necessarily occurs in collaboration with an adult or peer. For example, Malaguzzi (1993) stated:

The term ‘co-construction’ emphasizes the child as a powerful player in his/her own learning. The child as co-constructor provokes an image of the child as ‘rich in potential, strong, powerful, competent, and, most of all, connected to adults and to other children (p. 10).

The children demonstrated that they are rich in potential, strong, powerful and competent. However, my thesis challenges that the learning is necessarily through connection with adults or other children; this is often so, but not necessarily at all times. Children also “just” learn; it would be adultocentric (Litowitz, 1993) for adults or peers to claim responsibility for, or even partnership with, all the learning of children. Children are not merely recipients of given, or even shared, experiences; they also exploit situations and resources to best advantage and actively generate learning opportunities. Erin’s mother highlighted her daughter’s independent learning, stating:

5 Also ‘ready, willing and able’ (Carr, 2001).
She’s quite happy to go off and learn … will go off and read a book because it’s something new. (E: Parent interview, p. 4)

A more egalitarian view of power and influence is proposed by Baker, Scher and Mackler (1997): “The direction of influence is not simply from parent to child; rather, children’s behaviors influence those of their parents, which in turn influence future behaviors of the children” (p. 78). Scarr and McCartney (1983) proposed biological effects “determining not only which environments are experienced by individuals but also which environments individuals seek for themselves” (p. 424). If we honour the child as an active, empowered learner, then we also acknowledge that adults learn from children. As Oscar’s father related,

He likes sharing things with us too. [Oscar’s voice mimicked] ‘Did you know hedgehogs can’t climb?’ . . . I think he likes the thought of something new. (O: Parent interview, p. 9).

We were amazed at how fast… Something just opened up and there he was … It was almost overnight – that was it, he just knew how to read … at 2 ½ [years old], everything happened for David. I’m finding it difficult to pinpoint – it was not over an extended period … It was like the penny dropped one night. I remember him bringing me a book to read, then Bang! he could read. Wow! I was amazed. (D: parent interview, p. 6)

David’s parents, in the quote above, focus on David’s learning, not on their own ‘teaching’. They acknowledge that he would initiate storybook reading with adults by bringing books to them. They also reported that the process of learning to read was an extremely rapid, self-internalised experience. Finally, their amazement at his ability and achievement also illustrates that they gave credit to David (not themselves or others) for his success. Consideration of the process of the children’s learning is integral to understanding their learning, as is recognition of the children’s role and and their experiences

Summary and Implications

The children were exceptionally fluent, voracious readers and demonstrated comprehension that was well above their chronological age. Their reading abilities meant they were able to read material that is not normally expected capable of being deciphered by young children. The typical pattern was of always being interested in reading, showing unexpected reading proficiency by the age of 3 years and reading independence before 4 years.
Parents asserted that they had not formally ‘taught’ their children to read. Three key factors influenced the children’s learning in this study: firstly, their ability to capitalise on their environment, support and resources, secondly, their self-regulation and, finally, “spontaneous” learning. This study suggests that all three aspects of learning are important.

Social constructivism recognises the important role of social interaction and environment. However, social support was not only “given to” children. The children also actively solicited support and information and capitalised on their environment. They asked to be read to, they asked for books and library visits, they asked for literacy-related games and challenges, and generally “demanded” literacy extension. It is important that adults recognise children’s role in social constructivism; co-construction recognises the process of joint interaction, but in addition some social learning situations are managed and controlled by learners.

Children in this study had self-regulatory, self-teaching abilities. Metacognitive ability was demonstrated by their thinking about their own thinking. The children were also reflective, had metalinguistic ability and analytical and problem-solving skills. It is important that adults recognise and appreciate children’s self-regulation. Vygotsky’s (1978) zone of proximal development acknowledges children’s learning in the zone between what they can achieve independently and what they can achieve with support. Children do not only move within this zone because of adult intervention, but also as a result of their own initiation of support. By taking responsibility for their learning progress, children are operating within the zone of executive functioning (Berk & Winsler, 1995). Skills and abilities that support independence, motivation and ongoing learning provide a valuable “tool kit” for 21st century learners (Mercer, 2002).

A learning-related outcome of this study is the data relating to spontaneous learning. Parents reported experiences of the children learning without having been taught, and without deliberate metacognitive self-teaching and reflection. The notion that children can learn spontaneously challenges contemporary contextual perspectives of learning and especially threatens the idea that children’s learning is necessarily attributable to adults’ co-construction and facilitation. However, the literature
considered in this study indicates that spontaneous learning does not necessarily conflict with the ideas of key theorists; Vygotsky, Piaget and other theorists have discussed “implicit”, “induced”, “intrinsic”, “unconscious” and “non-conscious” learning. Results of this study support these important social support roles, but also assert that such adult roles are not the only factors responsible for children’s learning: *children and spontaneous catalysts* are also key influences on learning.

The notion of spontaneous learning challenges traditional ideas about teaching and learning, with some people disbelieving that it is possible. This may reflect the proposition of Litowitz (1993) that adults with adultocentric views need to have their own contribution validated. Teacher-child relationships therefore reflect power issues and the belief that adults have responsibility for and control of children’s learning. Believing in children’s abilities and achievement requires respect for children and the belief that learning can occur in diverse ways. The notion of spontaneous learning does not suggest that children’s learning is divorced from social context, but it does affirm that social context cannot explain all learning. The results of this study suggest that adults should be more open to noticing the innate abilities and potential of children and learn from them.
References


engaged readers in school and home communities (pp. 89-113). Mahwah, New Jersey: Lawrence Erlbaum Associates.


