Spelling Skills: Development, Assessment and Instructional Strategies

Deborah Knight
Dalwood Assessment Centre
dknight@nsccahs.health.nsw.gov.au
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Overview

• Historical developments
• Characteristics of English orthography
• Critical foundational skills for spelling
• Relationship between reading and spelling
• Stage models of spelling development
• Children with spelling difficulties
• Assessment
• Instruction

Development of spelling skills has attracted much less research attention than reading. Before Read’s (1971) seminal work on children’s invented spellings, was broadly held that spelling skills were acquired largely through exposure to text from reading and whole word memorisation.

English orthography seen as far too complex and illogical to teach explicitly.

Instructional practice reflected these beliefs – rote learning weekly spelling lists, minimal attention to actively teaching encoding strategies and specific spelling rules. Problems of skill transfer.

Late 70’s to early 90’s – shift to naturalistic approach to teaching literacy skills, “whole language” approach.

Now considered too fragmented in its approach. Reliance on incidental learning, absence of systematic, rule based instruction - particularly troublesome for children with reading and spelling difficulties.

Also now recognised that English orthography is not nearly as chaotic as once assumed.
Study of:
- critical foundational skills
- the structural characteristics and embedded rules of English,
- developmental changes in spelling competence
  → better understanding of the difficulties experienced by children with spelling weaknesses
  → changes in methods of assessment
  → emphasis on systematic and explicit rule based intervention

Orthographic characteristics:
English writing system – a ‘deep or opaque’ alphabetic orthography.
26 letters, 44 phonemes
>30 common digraphs

Most variability in mapping letters to sounds occurs for vowels eg. the sound /ɛ/ can be written as ‘a’, ‘ai’, ‘ay’, ‘e’, ‘ea’, ‘ei’, ‘eo’.

Critical Processes
Two foundational skills:
1. Phonological Awareness – capacity to segment words into constituent phonemes. Provides insight into the alphabetic system and links between phonemes and graphemes.
2. Knowledge of letter names and sounds – provides clues to associated phoneme (not H,W,Y) & helps to establish secure orthographic representations.

K to mid Y1 - 68% variance in spelling development attributable to letter-sound knowledge and phoneme isolation skill. (Caravolas et al, 2001)
Links between Reading and Spelling

Share the same early predictors but tend to function independently in the early stages of learning. Early on children typically use a phonological strategy for spelling but rely more on visual and contextual clues for reading (Bradley and Bryant, 1980).

Spelling instruction assists reading development in early schooling by encouraging attention to sound structure of words (Berninger et al, 1998).

Exposure to print later assists spelling by helping to consolidate orthographic representations.

By around age 8 years correlations between reading and spelling are much stronger (r .89 to .92) as strategy use becomes more integrated (Westwood, 2005).

Spelling presents more exacting demands on phonological skills than reading. Helps to explain the persistence of spelling difficulties.

Stages of Spelling Development

Widely held that children progress through a number of developmental stages in the course of becoming competent spellers (Gentry, 1987; Ehri, 1989, 1997)

Each stage characterised by use of qualitatively different skills. Stages not age fixed and speed at which children master skills is heavily influenced by the quality of instruction.

Pre-phonetic stage (3 to 5 years)

- Mostly random strings of capital letters, sometimes numbers
- Don’t yet understand that letters are used to represent sounds in words
- Written form is typically thought to represent a word’s meaning i.e. ‘whale’ should be spelt with more letters than ‘mosquito’
Semi-phonetic stage (4 to 6 years)

- emerging phonemic awareness and knowledge that sounds can be represented by letters,
- not able to fully apprehend all of the sounds in words, tend to spell only the more salient sounds and often omit vowels,
- knowledge of letter-sound correspondences is incomplete, letter names frequently used to represent both sounds and syllables. Constituent phonemes in liquids (R, L) harder to segment, so used more frequently and are more persistent: ‘prk’ for park, ‘sll’ for self.

Alphabetic or Phonetic stage (5 to 7 years)

- increasing sensitivity to the phonemic structure of words,
- letter by letter sounding out,
- tendency to regularise irregular words (eg. ‘ov’ for of, ‘hav’ for have),
- often insert additional sounds when segmenting (eg. ‘wiy’ for why),
- some sounds more difficult to segment so often reduce consonant clusters most commonly nasal sounds in final clusters (eg. ‘sed’ for send, ‘wet’ for went) and liquids ‘r’, ‘l’ (eg ‘pup’ for plump, ‘cap’ for cramp),
sounds with shared articulatory features (p/b, d/t) are often confused (eg. 'spet for spent'),
common morphographs frequently written phonetically (eg. 'laft' for laughed),
vowels in unstressed syllables often omitted (eg. 'elfnt' for elephant),
speech production errors commonly repeated in written form (eg. 'fin' for thing).

By end of phonetic stage:
understand that regular words can be written accurately through sounding out,
can identify most sounds in single and some multisyllable words,
visual features of common words and some letter sequences are stored in memory enabling more rapid retrieval,
beginnings of the use of analogy for spelling unfamiliar words,
growing recognition that common morphemes (eg. -ing, -s, -ed) are spelt in a consistent fashion regardless of pronunciation (eg. jumped not 'jumpt').

Consolidated alphabetic stage (6 to 11 years)
recurring letter sequences (eg. -able, -tion, -ious, -ight) learned through instruction and practice,
larger orthographic units consolidated in memory, segmentation strategies become increasingly syllable based,
begin to internalise more complex rules eg. consonant doubling to preserve short vowel sounds – dig/digging, final vowel deletion with suffixes – make/making,
• number of words stored in ‘visual-orthographic’ memory enables use of checking strategies to determine if a word looks accurate,
• spelling becomes largely a retrieval process and most familiar words spelt with little cognitive effort.

Independence (11+ years)

• competent spelling,
• firm orthographic representations for most used words,
• secure, multiple strategies for attempting unfamiliar words,
• skilled use of self checking strategies,
• common errors still occur e.g. separation, accommodation.

Stage Models challenged for failing to capture the complexity of spelling development (Varnhagen et al, 1997; Treiman & Bourassa, 2000; Moats, 2005)

‘Overlapping waves’ model – development is more variable and adaptive than implied; children may call upon more than one strategy to guide spelling and may produce spellings typical of several stages.
Children with spelling difficulties

- struggle to master the complement of strategies and knowledge needed for accurate spelling,
- weak foundations in phonemic (segmenting sounds) and orthographic (knowledge of letter sequences) awareness,
- spelling attempts often characteristic of semi-phonetic and phonetic stages and are typically non-random

Common errors involve:
- consonant confusions (more likely if the consonants share articulatory features (b→p, t→d, c→g, s→z, f→v))
- vowel substitutions
- consonant cluster reductions
- vowel digraphs
- inflected endings (eg. plural -s, past tense -ed)

Assessment
- indicates level of development
- identifies weaknesses and instructional needs
- monitors effectiveness of intervention

Goal of testing defines the methods used.

Methods
- Standardised tests: South Australian Spelling Test
  Dalwood Spelling Test
- Phonological awareness measure: SPAT-R, CTOPP
- Knowledge and ease of retrieval of individual letter-sounds, consonant & vowel digraphs
- Spelling of high frequency words
- Spelling of non-words
- Tangel & Blachman Test (number and accuracy of phonemes represented)
- Observation while writing
**Dalwood Spelling Test**
A standardised test of spelling achievement for students from K to Year 10. Available in parallel forms. Standard word list format. Administration time of 15 to 30 minutes.

**Item Selection**
- graded level of difficulty,
- sampling of common orthographic features, following the broadly recognised sequence of skills involved in spelling development.

**Scoring Tables**
- enable comparison of a student’s raw score with the average score of students at the same level of schooling and provide an indication of the student’s spelling level in year and school term equivalents

Enables examination of the following skills relevant for instructional programming:
- Knowledge of high frequency words (eg. *me, look, come*)?
- Knowledge of letter-sound correspondences.
- Ability to segment regular words with 3, 4, or 5 sounds (eg. items such as *hen, tusk, sperm*)?
- Do errors indicate appropriate analysis, but lack of familiarity with the orthographic rules (eg. ‘bote’ for *boat, ‘tork’ for talk*)?
- Is the student using analysis of sounds or relying more on retrieval strategies (eg. ‘slooh’ for *school, ‘spectalate’ for speculate).
- Can the student cope with multisyllabic words?
- How sophisticated is the student’s knowledge of morphographs and syntactic endings?
- Is the student familiar with unusual words? Is s/he a sophisticated speller (eg. *catastrophe, psychiatrist, chorister*)?

**Sample Description:**
- 48 schools - metropolitan, regional and remote
- 8436 students (49.5% boys, 50.5% girls)
- Kindergarten to Year 6 - 5356 students
- Years 7 to 10 - 3080 students
- Maternal education levels obtained for all primary school aged students
- Testing conducted continuously over four school years from January 2004 to June 2007.
### Expected spelling scores by school year and term

<table>
<thead>
<tr>
<th>Year</th>
<th>Term</th>
<th>Severe Difficulties</th>
<th>Borderline Difficulties</th>
<th>Average</th>
<th>Above Average</th>
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### School year and term equivalents

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<th>Score</th>
<th>Year</th>
<th>Term</th>
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<td>3</td>
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### Test Form Correlations by Years of Schooling

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<th>Y4</th>
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<td>.91</td>
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Test forms administered 7 days apart in counterbalanced order within each year grouping.

Mean scores were virtually identical for both forms of the test in Kindergarten, Year 1 and Year 10. For all other school years students on average scored one point higher on Form 1 than on Form 2.
Reading and Spelling Difficulties Group: Correlations between the DST and South Australian Spelling Test (SAST)

<table>
<thead>
<tr>
<th></th>
<th>DST Form 1</th>
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<th>SAST Form A</th>
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<td>SD</td>
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<td>6.3</td>
</tr>
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</table>

N= 118 (88 boys, 30 girls), mean age = 11.0 years

Intervention

- Letter-sound knowledge
- Segmenting skills and strategy training
- Look-say-cover-write-check
- Use of analogy
- Apply knowledge of morphemes
- Checking strategies