How much explicit phonics instruction is necessary?

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What exactly does it take to reach 'escape velocity'?

In recent years, there has been considerable attention given to the importance of explicitly teaching foundational literacy knowledge. This is for good reason. Alternative approaches have been based on the flawed assumption that beginning readers acquire literacy skills most efficiently through print exposure, with minimal code-based information directly communicated. Approaches like these have resulted in too many instructional casualties. Gaps in knowledge about the intricacies of foundational English sound-spelling patterns, which are best communicated through explicit teaching, leave students ill-equipped to tackle texts independently.

It is also true that there is an upper limit to the usefulness of explicitly teaching sound-spelling patterns. As grapheme–phoneme correspondences (GPCs) become less frequent in text, knowing the specific contexts that constrain their application becomes less helpful and learning them becomes more burdensome. Recently, concerns about 'over-teaching' foundational knowledge have been raised by Seidenberg (2024). According to Seidenberg, basic reading instruction that is delivered with the intention of arming students with the capacity to decode print is detrimental beyond a certain point because it leaves little time for actual reading. As such, we should employ explicit teaching wisely, withdrawing it and providing more opportunities for print exposure once students reach the point of being able to figure words out on their own.

The simplicity principle

In a seminal paper by Vousden et al. (2011), several analyses were conducted to determine which representational units are most useful to teach. To illustrate, the word 'beach' may be represented as:

- a whole-word unit (beach)
- a head–coda pairing (bea-ch)
- an onset–rime pairing (b-each)
- multiple grapheme–phoneme pairings (b-ea-ch).

According to the results, when students' reading vocabulary requirements extended beyond 50 words, teaching grapheme–phoneme units appeared the most favourable course of action. Specifically, 237 of these units were needed to accurately pronounce 3066 words that were derived from children's text (vs 1141 onset–rime units and 1285 head–coda units).

At a broad level, the above results provide support for the explicit teaching of GPCs. However, as subsequent analyses conducted by Vousden et al. (2011) showed, this instruction need not cover all 237 mappings. In fact, they found that 118 mappings were enough to accurately pronounce 73% of corpus data. Even this number may be more than necessary. When interpreting their results, the authors state that "knowledge of a considerably reduced number of GPCs may be sufficient to bootstrap reading acquisition, at least for some children" (p. 64).

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Solity (2020, 2022) is a strong advocate for teaching only a limited number of GPCs. According to early research by Solity and Vousden (2009), knowledge of 61 GPCs (alongside a list of 100 high-frequency words and three suffix and doubling 'rules') was sufficient to read 90% of words appearing in common children's books. This analysis was based on a corpus of 66 books, as opposed to the 685 books analysed by Vousden et al. (2011). Nevertheless, there is some evidence from behavioural research that early readers benefit from phonics instruction that is limited to approximately this scope (Chen & Savage, 2014; Shapiro & Solity, 2008).

As concluded by Vousden et al. (2011), "it is an open question as to how much explicit instruction is required before self-teaching can occur, or when semantic input can fill the gaps" (p. 64). Even so, the results above provide a useful starting point for determining where to draw the line. The Simplicity Principle is helpful because it justifies the approach of devoting explicit instructional time to only the most frequent and consistent GPCs.

Spelling

It is interesting to consider that arguments against extended GPC instruction tend to pertain to a reading context. In fact, it is likely that one of the key reasons to continue explicitly teaching GPCs beyond the point at which it might otherwise be discontinued is to facilitate students' *spelling* development. Transitioning too early to a method of instruction whereby students implicitly learn the GPCs in words via exposure to text may be disadvantageous in this regard. While some knowledge of word spellings is acquired via implicit learning, explicit instruction could help to speed up this process (Treiman, 2018).

According to this perspective, GPC instruction should extend beyond the early school years and involve explicit directions about rules that constrain the variability of GPC use. It may also be combined with morphological (and related vocabulary) instruction.

Struggling readers

Another reason to be cautious about withdrawing explicit teaching too quickly is that there are individual differences with respect to how successfully students learn through print exposure. That some students struggle with storing and/or accessing orthographic representations is well-established (Ehri & Saltmarsh, 1995; Wang et al., 2015). More generally, at least a subset of struggling readers also appear to benefit less than typical readers from statistical learning opportunities (Arciuli, 2018; Sawi & Rueckl, 2019).

There is clear research evidence to justify the provision of more intense and individualised GPC instruction for struggling readers (Galuschka et al., 2014; McArthur et al., 2018). However, it is an open question as to whether the scope of this instruction needs to be different. Seidenberg (2024) describes explicit instruction as a means of achieving 'escape velocity'. In other words, and as described above, it is the most efficient way of getting students to a point at which they have mastered so much code knowledge that they can read independently and learn implicitly. It is possible that many struggling readers have a higher threshold for escape velocity, meaning that extended GPC instruction (relative to their average same-aged peers) is especially helpful because it makes explicit what is difficult for them to learn implicitly. On the other hand, this is not possible to attempt in a whole-class setting. It is not even especially practical to attempt in a small group or individualised setting, where the content should mirror Tier 1 instruction and where instructional time is still constrained.

From the 'struggling reader' perspective, and in the absence of empirical data, the question of how much explicit phonics instruction to deliver becomes one of value, rather than research. To be equitable, enough GPCs should be taught explicitly to the whole class that those less able to extract information from print exposure are not disadvantaged.

Summary

It is reasonable to suspect that, under the right conditions, students can learn a good amount of foundational code knowledge in the first two years of formal schooling. That said, even if they have reached a point at which they can read connected text with minimal input and feedback from a teacher, it does not follow that students have nothing further to learn from explicit teaching of sub-lexical patterns. In particular, spending additional instructional time on explicit teaching of GPCs may be beneficial for improving students' *spelling*. This point has not received as much consideration as reading, with respect to the evolving roles of explicit teaching and implicit learning. Similarly, it is not clear from research how best to meet the needs of those less likely to learn implicitly from print exposure, or how this factor translates into the provision of whole-class instruction.

With respect to the implications for instructional design, there is justification for continuing explicit whole-class sound-spelling mapping instruction beyond the first two years of schooling. Predominantly, this should aim to build students' encoding (vs decoding) skills, with directed focus given to the morphemes in polysyllabic words and more complex GPCs that require consideration of context. Such instruction should be delivered alongside opportunities to engage with a lot of connected text. From a teacher-led instructional perspective, this should take the form of fluency or comprehension instruction. From a broader perspective, students should be provided with access to (and support in selecting) materials for independent reading outside of the classroom.

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