

An explorative study into the effectiveness of different spelling strategies and children's own perceptions of themselves as successful spellers

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ABSTRACT

Evaluating the effectiveness of school-based literacy interventions is an area for investigation particularly in the context of inclusive practice and universal provision. This case-study in a rural primary school in Wales, explored how Year 4 pupils identified as requiring additional support, were taught spelling strategies using research-based teaching approaches over a period of eight-weeks, and whether this had an impact on self-perception as successful spellers. Using a mixed-method approach, data was gathered via summative assessments, pupil questionnaires and focus group interviews. Findings suggest that bespoke spelling interventions using established teaching techniques incorporating multi-sensory pedagogical approaches improved both individual perceptions of spelling ability and spelling performance. Considerations on how to approach the teaching of spelling within primary settings was identified for future investigation with findings from this study shared with statutory officers and ALNCOs from across the local authority.

Introduction

Approximately 20% of children in Wales have Additional Learning Needs (ALN), (SNAP Cymru, 2022) with speech, language and communication difficulties identified as the area of greatest need in primary schools for the past three years (Welsh Government, 2024). Once identified, the need is monitored and recorded through the school's

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graduated response. This ensures that needs can be met at any level, with Additional Learning Provision (ALP) starting at ‘the lowest level necessary to meet the child or young person’s needs, making use of all available resources before bringing in specialist expertise’ (WG, 2022, p. 23). In this context schools offer intervention to children identified as requiring additional tuition to improve knowledge and understanding.

As ALNCo I was aware of an increase in referrals for specialist literacy support at the setting. To mitigate this, new approaches to address some of the language, literacy and communication needs within the school were adopted. I explored the impact of these interventions in terms of academic improvement and self-efficacy in relation to spelling.

Literature Review

Interventions

Effective intervention is an area requiring further research. However, Murphy (2015) states that in doing so the following three key aspects are crucial: time, money and human resources. In the current climate, it is recognised that these resources are limited, making it essential that interventions undertaken are impactful. To determine what needs to be taught, baseline assessments must be conducted pre-intervention (Ausubel, 1968; Van de Pol et al., 2014). Children’s evaluation and teacher self-reflections are other ways to establish impact, but they are not reliable. Interventions need to be carefully planned, prepared and based in research as intervention administered in an ad-hoc way will not bring about the desired change (Meiklejohn et al., 2021).

Teaching Spelling

Reading requires the brain to make links between written symbols, their sounds and meaning, whereas spelling requires the brain to link sounds and meaning to written symbols (Purcell, Shea and Rapp, 2014), using different parts of the brain.

Early instruction in phonological awareness and phonics—which are connected to the alphabet’s sounds—helps children create mental maps resulting in cognitive changes. (Richards et al., 2010). This lays a strong

basis for their future development in spelling, reading, and writing. However, children with dyslexia or dyslexic tendencies have significant difficulty understanding letter-sound correspondences. This is due to an underlying neurobiological difficulty with phonological processing (Nora et al., 2021). Due to difficulties differentiating between sounds and letters in the left hemisphere of the brain, children with dyslexia will find phonology challenging and studies suggest that around 7% of the population are dyslexic (Peterson and Pennington, 2012). In a successful spelling intervention, tuition cannot rely on phonics alone. Visualisation, where children picture the letters within a word before writing it down can be beneficial (Harris et al., 2017). Children with dyslexia can benefit from this strategy (Itaguchi et al., 2017). Moreover, multisensory teaching techniques could be useful. Using the senses harnesses a learner's full range of cognitive abilities, therefore strengthening memory and recall (Newman, 2019).

In terms of phoneme to grapheme patterns (spelling) and grapheme to phoneme patterns (reading), the English language is highly irregular and thus can cause significant challenge (Ardanouy et al., 2023).

Understanding how words are formed is vital, '...morphology is important for spelling and decoding because the English writing system is in part morphologically based' (Nagy, Carlisle and Goodwin, 2014, p. 3). The teaching of orthography, phonology and morphology in learning how to spell is further supported by the Triple Word Form Theory (TWFT) (Garcia, Abbot and Berringer, 2010), which identifies these as essential elements of spelling instruction that children access from an early age (Daffern, Mackenzie and Hemmings, 2015).

Children's Own Perceptions of Themselves as Successful Spellers

Evaluating children's perceptions of themselves were a key aim of this research. Children with a literacy difficulty such as dyslexia, are more likely to develop a negative view of themselves as learners (Gibby-Leversuch, Hartwell and Wright, 2021). Children's level of effort in their work may be affected if they have a poor self-perception of themselves as learners. Self-doubt in their ability, and a belief that they are not intelligent, becomes a self-fulfilling prophecy due to a lack of effort and therefore an element of failure, which is very demotivating (Busch and Watson, 2019).

Methods

As the aim for this research was to gain an understanding of ‘people’s lived experiences and how they understand things’ (Denscombe, 2021, p. 43), I approached this research from a constructivist standpoint. I wanted to gain an understanding as to why previous spelling interventions had not been successful.

I chose a case study approach for this research as they ‘provide an opportunity for one aspect of a problem to be studied in some depth within a limited time scale’ (Bell and Waters, p. 28, 2018). This enabled me to plan and deliver a bespoke spelling intervention, with methods pedagogically based in research evidence, to a small number of pupils within a short eight-week time frame. Hopkins (2014) states that case studies are an easy approach to both evaluate the efficacy of teaching methods and provide a clear picture of pupil’s reactions. Exploratory case studies can be precursors to forthcoming, larger studies but also allow for realistic objectives to be set and for a topic to be studied in reasonable detail, especially when there are time limitations (Biggum, 2017).

Ethics

Ethical approval was granted by the university’s Ethics Committee prior to commencing. Parents of the children involved in the study were invited to a short presentation where I discussed the purpose and aims of the research, the potential involvement of their children and how data would be stored and used. They were also given an information sheet. I made it clear that involvement in the project was voluntary and that they could withdraw their children at any time. Following both the British Educational Research Association and United Nations Conventions on the Rights of the Child guidance, children agreed to be involved by signing a child-friendly assent form and throughout the research period all children were given pseudonyms.

A risk associated with this research was that the spelling intervention could negatively impact the children’s own self-esteem and perceptions of themselves, and this was explained to parents. Should a negative impact be observed then the school’s wellbeing interventions were offered to support children and their families. Websites offering additional help and advice for spelling and literacy difficulties were shared with parents.

Sampling Procedure and Description

The twelve children participating in the study were from the same Year 4 class. They had similar standardised scores (between 80 and 90) from summative spelling assessments taken simultaneously. All children had been taught to read and spell through a phonics-based approach. They took part in sixteen intervention sessions over an eight-week period. Each pupil completed questionnaires both prior and post intervention and all twelve were invited to take part in one of the focus group interviews. The research used a mixed methods approach, triangulating both qualitative and quantitative data to address the following research aims:

1. To explore how a spelling intervention impacts on a pupil's ability to accurately spell.
2. To evaluate how pupils perceived their own ability (both pre- and post-intervention).
3. To identify techniques and strategies that worked well and not so well within the intervention from the pupils' perspectives.

Data Generation and Analysis

Prior to the intervention participants completed Likert Scale questionnaires to ascertain whether they perceived themselves as successful spellers. The Likert Scale utilised faces as a pictorial representation of the scale as was considered better for young children (Coe et al., 2021). Quantitative data were gathered from a summative assessment and from a baseline spelling test of thirteen key words, selected from the children's own work. The Likert Scale questionnaire and quantitative assessments were repeated post intervention, and results compared.

Two focus group interviews provided participants with an opportunity to share thoughts and opinions amongst their peers, which helped to make them feel more at ease (Morrison, 2013). In my dual role as the class teacher and researcher, I needed to remain objective and selected a trusted representee to conduct the interviews. I coded the children's responses thoroughly using Braun and Clarke's (2022) thematic analysis. I utilised this information to prepare questions which targeted questionnaire responses of individual participants through a semi-organised discussion.

Results and Discussion

Quantitative Data

The primary aim of this research was to explore how a bespoke spelling intervention impacted on pupil's ability to accurately spell. Findings from the research were positive, with eleven of twelve participants making progress both in standardised assessment scores (SAS) and spelling ages. The table below shows pupils' standardised scores both pre- and post-intervention.

The mean gain in SAS was 5.5, whilst the mean for children who did not take part in the intervention was 1.75. The increase in SAS was substantially higher amongst children receiving the intervention.

The time difference between the pre and post intervention tests was four months. Nine out of the thirteen participants achieved an increase in their spelling age of over one-year, pleasing progress in a relatively short period of time. The mean gain in spelling age amongst participants was 14.25 months. In comparison, the mean increase in spelling ages for the remaining children was 8.2 months.

An improvement of over a year was achieved by nine of the twelve participants with a mean gain of 14.25 months. Value added would be impossible to calculate without initial assessments. Determining what the children already knew (Ausubel, 1968) was fundamental to both collecting the quantitative data and determining where the gaps were in children's knowledge.

Assessments on alphabet knowledge pre-intervention demonstrated that all children were able to recite the alphabet accurately as far as 'k', however the middle section of the alphabet, 'l m n o p', was difficult for five of the twelve children and three could not recite the last 4 letters accurately. Recitation of the alphabet was incorporated into intervention sessions and at the end of the intervention all participants but one were able to recite the whole alphabet correctly. This supports Vacca et al. (2006) who state that knowing the letters of the alphabet is the starting point for spelling. Richards et al. (2010) also support teaching the sounds of letters in the alphabet going so far as to say that it is the foundation for spelling, reading and writing. However, as there were so many other elements to the sessions, it is impossible to ascertain the impact of alphabetic knowledge alone.

Table 1. Pupils' standardised scores pre- and post-intervention

	<i>Norah</i>	<i>Laura</i>	<i>Carl</i>	<i>Ryan</i>	<i>Tommy</i>	<i>Rosie</i>	<i>Ioan</i>	<i>Niall</i>	<i>Greta</i>	<i>Gethin</i>	<i>Molly</i>	<i>Campbell</i>
SAS Spring	76	78	82	89	84	86	79	84	85	81	88	84
SAS Summer	83	81	87	102	87	97	80	89	91	83	99	83

Table 2. Gains in spelling ages

	<i>Spelling Age Before Intervention</i>	<i>Spelling Age After Intervention</i>	<i>Difference</i>
Norah	6 years 0 months	7 years 6 months	+ 18 months
Laura	6 years 0 months	7 years 2 months	+ 14 months
Carl	6 years 5 months	7 years 9 months	+ 16 months
Ryan	7 years 6 months	9 years 1 month	+ 19 months
Tommy	7 years 6 months	8 years 5 months	+11 months
Rosie	7 years 8 months	9 years 0 months	+ 16 months
Ioan	6 years 6 months	7 years 7 months	+ 13 months
Niall	7 years 8 months	8 years 6 months	+ 10 months
Greta	7 years 0 months	8 years 3 months	+ 15 months
Gethin	6 years 1 month	7 years 7 months	+ 18 months
Molly	7 years 10 months	9 years 3 months	+ 17 months
Campbell	7 years 5 months	7 years 9 months	+ 4 months

Successful Techniques

A variety of multisensory techniques were employed during sessions, such as creating letters out of cereal and utilising chalk, glitter, paint, flour, foam, sand, and salt. Favoured materials used were flour ('was fluffy. It was a nice feeling.') and cereal. Small-group interview discussions revealed that cereal was preferred because it was edible rather than because of its texture.

By repeatedly writing the same word within a set amount of time, speed writing was utilised to help spellings transfer from working memory into long-term memory, building neural pathways. This technique is used at the end of each Cued Spelling session (Topping, 1995) and features in Pie Corbett and Julia Strong's book *Talk for Writing across the Curriculum* (2011). This method received a mixed response during interviews but were positively received during the sessions. The students were able to visualise the words with the use of Constant Time Delay, and each session began with a review of the prior focal words. Frequent revision helps to commit learning to long-term memory and develops neural pathways (Widagdo, Wong and Anggono, 2022).

Figure 1. Children's perceptions of their own spelling ability

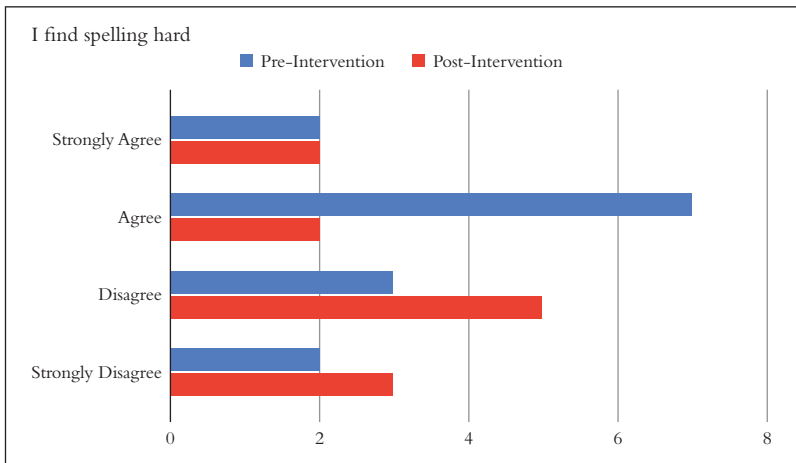
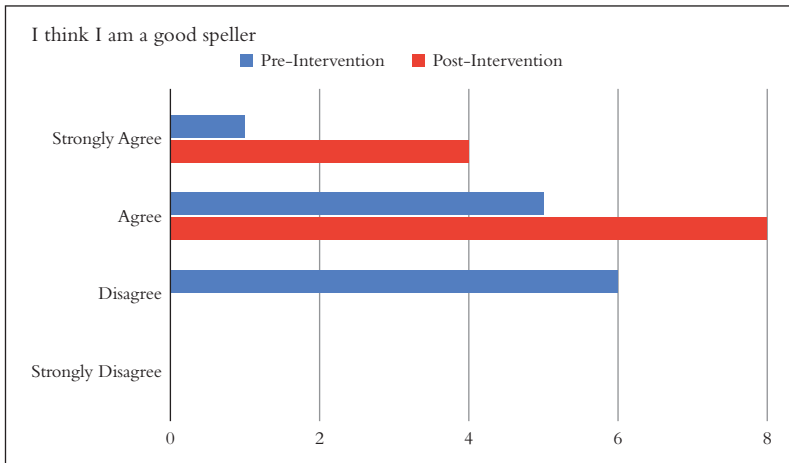


Figure 2. Children’s own perceptions of themselves as successful spellers following intervention



The use of mnemonics was well received by the children. Ten out of the twelve participants responded positively to using this technique. Since mnemonics work best when this is the case, the participants devised the mnemonics that were employed (France et al., 1993). Most participants responded favourably to studying word morphology, which is helpful in overcoming the many irregularities present in English (Ardanouy et al., 2023).

Likert Scale questionnaires were completed both pre and post intervention. Pre-intervention, nine participants either strongly agreed or agreed that they found spelling difficult. Following intervention, this number reduced to four. Moreover, three of the children strongly disagreed.

After the sessions, all six participants who had disagreed with the statement before the intervention agreed post intervention. The fact that all twelve of them agreed or strongly agreed suggests that they felt more confident about their abilities as proficient spellers. This is significant because, as noted by Busch & Watson (2019), participants are less likely to have low self-esteem and to satisfy the self-fulfilling prophesy of failure and self-doubt.

The intervention did not adversely affect any child in terms of self-confidence and self-perception and participants spoke highly of the experience. One participant gave the explanation that ‘the fun way we did it’ was the reason they loved the sessions. Each session was planned in response to the previous session so that the sessions were never ad hoc, something that Meiklejohn et al. (2021) asserts are vital to an intervention’s success.

Conclusion

Data gathered from the study showed that pupils’ spelling ability improved significantly following the intervention. The participants’ SAS increased by a mean of 5.5, and their spelling ages improved by a mean of 14.25 months. The success is more evident when compared to the rest of the cohort, whose scores improved by 1.75 and 8.2 months respectively. As a result of this study, the way spelling is taught throughout the school has changed, and methods of delivery that participants prefer are noted. After the intervention, all participants agreed or strongly agreed that they were proficient spellers, and fewer of them found spelling difficult. Given the limited scope of this study, additional research on the techniques employed would be beneficial.

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