# Commentary on "Looking towards the future: the potential of Precision Teaching in the work of the educational psychologist in Ireland". Considerations when using Precision Teaching to support students with complex learning needs

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**Abstract**

**Purpose** – *This paper aims to endorse and elaborate on the recommendations put forward by Griffin and Mannion (2024).*

**Design/methodology/approach** – *Specifically, this paper aims to expand on the potential for the application of Precision Teaching (PT) at the School Support Plus (for a few) level of the Irish continuum of support.*

**Findings** – *This paper focuses on applying PT to support learners with complex learning needs and emphasises the importance of viewing PT as a flexible system that can be adapted to support all learners.*

**Originality/value** – *Considerations and adaptations for using the PT system to support learners with complex learning needs are discussed, including count times, frequency aim ranges, practice type and assuring assent and social validity.*

**Keywords** *Precision teaching, Frequency-building, Special education, Academic skills, Celeration*

**Paper type** *Viewpoint*

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## Introduction

This paper aims to endorse and elaborate on the recommendations put forward by (Griffin and Mannion, 2024; this issue). Specifically, this paper focuses on the potential for Precision Teaching (PT) as an approach to teaching and learning for children with special education needs in schools in the Republic of Ireland. As highlighted by Griffin and Mannion (2024), PT is a highly effective system incorporated to enhance teaching and learning; however, its application is still emerging in Irish educational practice.

In the literature, PT is primarily evaluated at the Tier 2 level in a *Response to Intervention* framework or in relation to the Irish Continuum of Support at the *School Support (for some)* level (Department of Education and Science, 2007). However, as outlined by Griffin and Mannion (2024; this issue), there is scope for PT as a tool at Tier 3 or in the *School Support Plus (for a few)* level of the continuum of support, which is described by the National Council for Special Education as supports for children with complex and/or enduring needs (National Council for Special Education, [NCSE], National Council for Special Education, 2019). Children

with low-incidence disabilities, such as moderate, severe or profound general learning disabilities; significant physical or sensory impairment; emotional disturbance and/or behaviour problems; and autism often present with complex and enduring learning needs, and the NSCE (2019) highlighted that they may require a "differentiated curriculum".

PT, through progress monitoring and data-based decision-making, is well placed to aid teachers and other professionals, such as behavioural and educational psychologists, to differentiate the curriculum and select appropriate Individualised Education Plan goals for learners. For PT to be used to its full potential to support learners with complex needs, it must be viewed as a "system", as outlined by Evans *et al.* (2021), and not a specific intervention. PT does not tell the intervention agent how or what to teach but whether their teaching and learning approaches are working to help the learner make adequate progress (Evans *et al.*, 2021). Thus, a PT programme may appear rather different at the *School Support Plus (for a few)* level than it would at *School Support (for some)*, and as it is a flexible system, it has the scope to do that.

The PT guiding principle – "the child knows best" (Lindsley, 1990) fosters the individualisation of teaching and learning approaches for students. An underlying assumption of the PT approach is that the learner performs as best they can, given their current learning environment. It is the precision teachers' role to assess that learning environment and to make decisions about potential changes that might be made to create the most supportive learning for students. Recording learners' data on the family of Standard Celeration Charts (SCCs; Calkin, 2005) allows the precision teacher to visually analyse as well as quantify learner progress through celeration and to establish the minimum rate of learning that should be achieved with pivotal academic skills so that students can progress smoothly through academic curricula. When the minimum rate of learning is not achieved over several sessions, educators can problem-solve with their learners regarding how the learning environment can be changed accordingly.

In a recent review summarising the implementation of PT to improve academic skills, McTiernan *et al.* (2022) found that frequency-building was the most common intervention implemented in conjunction with the PT system. Frequency-building is the timed practice of a pinpointed behaviour followed by performance feedback (Kubina and Yurich, 2012). This combination is reflected in Irish research (Brosnan *et al.*, 2018; Lambe *et al.*, 2015; Mannion and Griffin, 2018; McTiernan *et al.*, 2016, 2018). It is also reflected in practice guidelines for Irish educators; for example, the National Educational Psychological Service recommends frequency-building to practice literacy skills (National Educational Psychological Service, [NEPS], National Educational Psychological Service, 2019).

Although the combination of frequency-building and PT can be an effective approach (Gist and Bulla, 2022) for students with complex learning needs, McTiernan *et al.* (2022) found that most research has been conducted with neurotypical students. The evidence for PT and frequency-building in this regard is only just emerging, with several examples demonstrating its potential for effectiveness (Vostanis *et al.*, 2022; Vostanis, Padden, Chiesa, *et al.*, 2021; Vostanis, Padden, McTiernan, *et al.*, 2021). In looking towards future applications and evaluations of PT with students with complex learning needs, it is important to consider potential adaptations to the practice type incorporated within the PT system.

## Count times

There is often a misconception that PT and frequency-building must involve a 1-min count time followed by performance feedback. Although one minute is an appropriate timing length for many academic skills, it is important to note that the count time length is a flexible or variable feature within the PT system (Evans *et al.*, 2021). Some children with complex needs may not have the endurance or "attention span" to work for a full 1-min timing (Binder

*et al.*, 1990). Thus, we may need to start with shorter timings, for example, 15 or 30 s, and systematically increase the timing period when the learner reaches their frequency aim to that expected in the natural environment (Binder *et al.*, 1990). For example, Cavallini *et al.* (2010) used count times as short as 10 s when using frequency-building to teach reading skills to school-aged learners with low-incidence disabilities, whereas Vostanis *et al.* (2021) used 30 s when teaching numeracy skills. Individualising the count times to set the learner up for success can help foster a positive learning environment. Whereas practicing skills that are not yet fluent for a prolonged period can be frustrating for learners and result in negative emotional behaviours, high error rates and slower learning rates (Binder *et al.*, 1990).

McTiernan *et al.* (2022) noted that, across reviewed studies, count times were differentiated and reduced based on participant age and recommended that future research be conducted to understand optimal count times across diverse learners better. This was also recommended by McTiernan *et al.* (2021), who identified participant age as a significant moderator of outcomes of a frequency-building intervention. In their study, younger participants responded accurately. Still, they could not achieve the same frequency aims as their older peers, indicating a necessity to adapt and individualise frequency-building approaches, whether it be based on students' age or differing abilities.

One reason why the 1-min count time is so popular may be that it requires the least response effort when recording performance on the SCCs. Technology offers an exciting avenue to make recording count times more or less than 1 min easier, with software such as PrecisionX and AimStar charting data for the user. The learner or the teacher can record the number of correct and incorrect responses and the count time using a smart device, and the software generates a virtual learning picture on the SCC for the user. For a more thorough discussion on charting count times, see White and Neely (2012), Johnson *et al.* (2021) and Kubina and Yurich (2012). Technology can also facilitate and enhance the adoption of PT in educational settings via telehealth (Kapoor *et al.*, 2023). This can be useful when working with learners with complex learning needs and allows the intervention agent to use a collaborative approach. For example, a psychologist or supervisor can review progress on SCC and highlight it to a teacher when a learner needs additional support.

## Frequency aim ranges

McTiernan *et al.* (2022) found that, across studies, unlike count times, frequency aim ranges were not differentiated or adapted based on age or diagnosis. However, it is likely that frequency aim ranges that are appropriate for neurotypical learners may need to be adapted based on complex learning needs. Again, McTiernan *et al.* (2021) noted that younger participants, although achieving accurate performances with mathematics skills, could not achieve the same frequency aims as their older peers during a frequency-building intervention. It may be that frequency aim ranges and count times should be adapted and individualised based on learner age and learning needs. Individual differences in cognitive abilities, such as processing speed, should be considered when selecting aims for learners with complex learning needs who have been demonstrated to score lower in assessments of such cognitive abilities (Calhoun and Mayes, 2005).

McTiernan *et al.* (2014) found a significant correlation between scores on the Processing Speed Index (PSI) sub-test of the Wechsler Intelligence Scale for Children, Fourth Edition (Weschler, 2003) at pre-intervention and the number of frequency aims achieved during a frequency-building intervention. Higher pre-test scores on the PSI were strongly associated with achieving more frequency aims. These findings were demonstrated with a small sample of 14 learners and in the absence of a control group; however, they should be built upon to investigate the impact of differing cognitive abilities on the achievement of frequency aims across academic skills.

It may be the case that a lowering of frequency aim ranges may lead to less optimal outcomes with regard to fluency by-products known by the acronym maintenance, endurance, stability, application, adduction (Johnson *et al.*, 2021), but this is a question that needs to be answered empirically. In any case, additional research is necessary to further our knowledge on how best to select frequency aims and count times for learners with more complex learning needs.

In the absence of a significant body of empirical literature on this topic, it is an important consideration for professionals such as psychologists and teachers who aim to support children in the School Support Plus level of the continuum using PT. It may be that a larger emphasis should be placed on the need to implement frequency-building in conjunction with PT so that regular and data-based decisions are made with regard to appropriate frequency aims. Also of importance is the need for robust training in the PT approach to develop competent and flexible implementers with strong clinical intuition.

### Practice type

Although frequency-building is the most common intervention used with PT for improving academic skills (McTiernan *et al.*, 2022), it is important to acknowledge that precision teachers are not restricted to traditional frequency-building approaches as a type of practice. For example, the practice of academic skills can be measured using a count-up or total duration to complete the task approach. Instead of seeing how many words a learner can read, sums they can answer, and letters they can write in a set period, the teacher can record how long it takes the student to complete these activities. The teacher can then convert this to a rate per minute, mark the record floor and chart as usual on the SCC. Ruymaekers and Frederick (2018) explored the impact of ascending vs descending timers on stress and motivation in undergraduate students during a five-minute matching task. They found no significant differences in stress between both conditions, but the students were significantly more motivated in descending or countdown timer conditions. This interesting finding and research question should be replicated with younger learners and those with more diverse and complex learning needs.

To date, there is limited research evaluating adaptations to and alternatives to traditional countdown frequency-building, such as count-up approaches or frequency-building versus untimed practice (i.e. overlearning). The accessibility, feasibility and preference for frequency-building should be further evaluated with learners with complex learning needs. Alternative practice types and adaptations that make frequency-building more accessible should also be investigated.

### Assent and social validity

From their implementation of PT in educational settings, Diffley *et al.* (2024) found that learners sometimes report that they do not like elements of PT, for example, the countdown timer. In line with socially valid, assent-based practices, the authors supported and reinforced their learner's self-advocacy behaviours. As highlighted by Baer (1986, p. 146), "the true function of social validity is to reveal discontent". This is also in line with Griffin's and Mannion's (2024) interpretation of the guiding principle in PT, that "the child knows best". The precision teacher should not only consider this principle when assessing progress and learning outcomes but should consider it with regard to the learners' preferences about how they would like to learn (Wolf, 1978).

To date, little research has addressed the social significance of goals, the social appropriateness of procedures and the social importance of effects concerning PT research and practice. McTiernan *et al.* (2022) found that a minority of studies in their review (36%) explored social validity. To increase the uptake of this highly effective system and maximise its potential for learners, more research exploring assent and social validity in PT

is required. As highlighted by Hanley (2010, p. 2), "efficacy without adequate social acceptability is a recipe for marginalisation". When working with learners with complex needs who do not communicate using vocal verbal language, practitioners and researchers should look for indicators of assent withdrawal throughout PT sessions and provide a choice between different types of applications of PT. Behaviour analytic technology, such as concurrent chained schedules, provides an objective way of assessing children's preferences (Hanley, 2010).

## Conclusion

Overall, there is great scope for PT and frequency-building to be incorporated into the Irish school system at each level of the continuum of support. As a flexible system, PT facilitates teachers in making decisions about learner progress and assists in the differentiation of teaching and learning approaches to develop the most supportive learning environments. This is particularly beneficial for students with complex learning needs, who may require more individualised approaches. Although there is great scope for PT and frequency-building to be incorporated across all levels of the continuum of support, precision teachers should consider adaptations necessary for implementing this approach with learners with diverse abilities and more complex needs. The current paper highlights several considerations, but this is not exhaustive. Future research should explore the application of PT and frequency-building in Ireland across the differing levels of support needs.

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