

Basic Principles of each Curriculum **in the Equals Multi-Tiered Curriculum Approach**

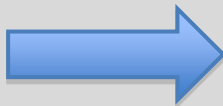
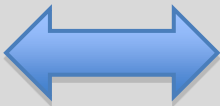
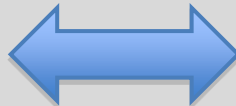
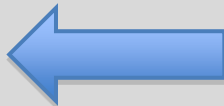
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This paper represents a broad pedagogical outline of each of the three Equals Curriculums for children, young people and adults with Profound and Multiple, Learning Disabilities (PMLD), Complex Learning Disabilities (CLD) and Severe Learning Disabilities (SLD)¹, their relationship to each other and their relationship to a national or common core standards curriculum.

Figure 1. The relationship between curricula in Equals' Multi-Tiered Curriculum Approach

Pre-Formal Curriculum	Informal Curriculum	Semi-Formal Curriculum	National Curriculum (NC)
Profound and Multiple Learning Disabilities (PMLD)	Complex Learning Disabilities (CLD), CLD/Autism	Severe Learning Disabilities (SLD), SLD/Autism,	Referring to the English NC but applicable to any NC or common core standards curriculum anywhere in the world
Working consistently and over time at the most profound level of any learning disability	Working consistently and over time at the most complex end of the SLD spectrum	Working consistently and over time at or below the earliest reaches of the NC	Working within typical or near typical age related expectations
			

¹ Details of the defining learning characteristics of learners with PMLD, CLD and SLD are to be found in Imray P, Sissons M and Kosyvaki L (2024). **Defining learning characteristics** in P. Imray, L. Kosyvaki and M. Sissons (eds) *A Different View of Curriculum and Assessment for Severe, Complex and Profound Learning Disabilities*. London. Routledge. This chapter is also available from Equals via admin@equalsoffice.co.uk

There are a number of features which are common to all of the Equals Curricula, namely, a recognition that:

1. The learner is always at the centre of the curriculum.
2. Each curriculum is designed to be holistic, and learning is not compartmentalised.
3. It is impossible for any National or Common Core Standards Curriculum (NC) to fulfill the educational needs of children, young people and adults (CYPA) with PMLD, CLD or SLD.

The learner is always at the centre of the curriculum.

All of the curriculums are broadly developmental in nature, but there are no elements that each (or indeed any) learner *must* learn. Each curriculum is designed to be flexible enough to change to fit each individual learner, rather than expecting the learner to change to fit the curriculum. Intrinsically motivated engagement is central to the efficacy of each curriculum. Equals follows the principle that *all* learners must be sufficiently motivated by the work demanded within their respective curriculum(s). This principle ensures that they work for the enjoyment of the work itself, whatever that might be, rather than being rewarded for working, as in for example, the work now, reward later model, or any behaviourist programme as applied in ABA, VBA and TEACCH. Seeking out intrinsic engagement, founded on teaching within the areas that directly motivate the learner, becomes a central precept, and Carpenter's fundamental maxim applies.

Sustainable learning can occur only when there is meaningful engagement. The process of engagement is a journey which connects a child and their environment (including people, ideas, materials and concepts) to enable learning and achievement (Carpenter et al., 2015, p22).

Once we teach the basic elements, to be repeated and repeated and repeated in a wide variety of situations, these naturally turn into routines which then present the possibility of being set into the long-term memory. How many repetitions will vary from one learner to the other, but the principle of **establishing** routines still applies.

Putting the learner at the centre ensures that we (their educators) can then move forward in three ways.

Firstly, by recognising the any teaching must be personalised to the individual learner; a school which has 400 or 200 or 50 or 10 learners working on any of the Equals Curricula, must be prepared for 400 or 200 or 50 or 10 different curriculums to be operating at the same time. There will undoubtedly be commonalities within each classroom, but individual learners will decide their own individual direction and pace of travel.

Secondly, by building on the base routine to tackle more complicated issues, for example, moving from making a toasted sandwich to (for example) spaghetti bolognese, allows for much of the learner's energy to concentrate on the relatively small amount of what's new. The base routine of any, and all cooking teaching, sees each learner through a series of individual tasks.

- Preparing oneself - washing hands, putting on an apron, tying back hair if necessary.
- Preparing to cook - seeking out the recipe, establishing what one already has, establishing what needs to be bought.
- Writing a list of what needs to be bought.
- Shopping for what needs to be bought - which in turn brings in a whole sequence of shopping routines.
- Going to buy, and returning with, the necessary items - which in turn brings in a whole sequence of travel training routines.
- Retrieving the recipe from wherever it is kept.
- Gathering all of the equipment and ingredients necessary for the recipe.
- Cooking the recipe.
- Tidying up, wiping down, dish washing and putting away.

Whilst engaged in the cooking process, many other skills previously practised in making a toasted sandwich can be practised again

- switching on electrical equipment and switching them off again when not in use
- using (potentially) hazardous kitchen equipment, such as a sharp knife, with confidence
- chopping, slicing, spreading, using a timer, using oven gloves etc, etc.

The principle of repetition, repetition, repetition doesn't have to be exactly the same thing over and over again (like counting to seven!) but can be constructive and interesting and motivating and engaging - all base principles of all Equals Curriculums.

Thirdly, by teaching that routines don't always work, and what to do when they don't. As a small and simple example of this thinking and problem solving exercise, the routine of collecting change from a purchase made with a single coin or note can be disrupted when the sum spent comes to exactly the value of the coin or note. There's no point in expecting the learner to automatically understand this, precisely because they have a severe learning disability; such a scenario has to be taught, left awhile, and then taught again, left awhile and taught again, and again and again until we're pretty sure each individual has had sufficient opportunities to practise according to their individual needs.

This leads to the general teaching principle which all experienced teachers of those with PMLD, CLD and SLD understand; repetition is the key to learning, but we must not make such repetition boring. By ensuring that intrinsically motivated engagement is central to the efficacy of each curriculum, Equals follows the principle that *all* learners must be sufficiently motivated by the work demanded within their respective curriculum, that they work for the enjoyment of the work itself, whatever that might be, rather than being rewarded for working. The curriculum moves forward at the learner's pace, not the teacher's and certainly not to fit any pre-prescribed, linear assessment model. Learning must be owned by the learner, not the teacher.

Each curriculum is designed to be holistic and learning is not compartmentalised.

There is no time when learners will *just* be working on Communication or *just* be working on Independence or Play or Art or Physical Well-Being or any other subject,

but will be working within many subjects at the same time. There may be elements of discrete teaching, such as when teaching Narrative in My Communication, or much of the teaching in My Independence (both within the Semi-Formal Curriculum) but even here many other areas of potential learning need to be considered at the same time. Narrative relates to how we communicate with others, how we explore our own personal identities, how we express such identities, and therefore directly relates to self-esteem, self-worth and good mental well-being. Shopping, an integral part of My Independence, sees the individual successfully accessing part of the wider community, entering into social relationships with others outside of school such as shop-keepers and sales assistants, conducting numerous and various elements of mathematics such as assessment of numerical need, coin and note recognition, means of exchange, one-to-one correspondence, number of items to be purchased, ordering items to be packed and stored, preparing the shopping list, knowing what clothing to wear in the journey to and from the shop, finding one's way to the shop, navigating the store - the list might not be endless, but it is certainly a long one.

Because each curriculum is designed to be naturally holistic, there is no need for any artificial holistic device such as is normally the case in primary mainstream schools, most often seen in the use of topic-based schemas. These typically run for a half-term or a term and follow a recognised pattern of artificially imposed themes that run throughout the school day, so that breadth and balance can be brought into the timetable. Thus, such topics as India, Dickensian London, The Romans, the Seaside, Space, Wille Wonka and the Chocolate Factory, allow teachers to bring in non-core subjects such as History, Geography, Science, Art, Music, R.E. etc. Such models are great for teachers, and in mainstream classrooms, great for the learners as well, but when working with pupils and students with PMLD, CLD and SLD, will suffer by likely abstraction of the topic - all those noted will be abstract to a greater or lesser extent, unless they've been recently experienced by individual learners. Topics, by their very nature, are ephemeral and time bound explorations. Just as learners get used to the concept of exploring Space in depth, the topic is changed, never to reappear again. If a learner REALLY engages with some element of it, the learning is lost as soon as the topic finishes, especially if the learner does not have sufficient communicative powers or skills to indicate clearly what particular part of the topic she'd like to repeat or extend.

Generally speaking, all of the 'subjects' taught in all of the Equals Curriculums follow a reimagining of Bruner's (1960) Spiral Curriculum, so that each subject starts at a base level and gets more layered as the learner progresses within it over time. The key element for teachers to remember is to always keep the teaching within the learner's level of competency, so that current learning is always connected to previous learning, builds upon itself, and grows in the direction that the individual learner is willing and able to take it.

It is impossible for any National or Common Core Standards Curriculum (NC) to meet the educational needs of children, young people and adults (CYPA) with PMLD, CLD and SLD.

This is by far the most complex of the three common features, and we have therefore given considerable space to exploring in some detail the educational relationship of those with SLD to Numeracy and Literacy as discrete teaching areas. It should be noted

that we have assumed that if those with SLD fail to make progress in these two crucial areas, those with CLD and PMLD will also (naturally) fail.

Irrespective of the level of differentiation, all National Curriculums (NCs) remain academic, upwardly linear in progression and start at levels that confound all but the highest achievers amongst those with global (rather than specific) learning disabilities, such as is experienced by all those of any age with SLD. When working within a NC (that is, any national curriculum including a common core standards curriculum) learners must achieve a level of fluent mastery in both literacy and numeracy merely to engage with the other subjects, never mind succeed within them. This is described in the levels achieved by neuro-typical 10/11 year olds, which seems to be the universally accepted age to move from the primary (generalist) phase to the secondary (specialist) phase of education. In other words, the purpose of any NC is to achieve at least the levels averagely attained by the end of the primary phase, and if this cannot be attained by an individual because of the depth of their learning disability, the curriculum must axiomatically, be purposeless.

As an example, the long and continuous experiment of England's National Curriculum, from 1988 to date, proves beyond doubt that those with SLD do not and have never, achieved within it (Nadji and Tymms, 2008; Imray and Colley, 2017). There is no research evidence which would give us reason to believe that differentiation works, though this is not necessarily about any paucity of research, but much more to do with focus. The last 40 years has seen many hundreds of peer reviewed, published research articles, book chapters and indeed, whole books relating to the learning difficulties experienced by children, young people and adults. Most have been able to advocate for single or multiple strategies by demonstrating x amount of statistically significant academic progress being made by x number of learners over x amount of time. In the third edition of *'What Really Works in Special and Inclusive Education: Using Evidence-Based Teaching Strategies'*, Mitchell and Sutherland (2020), note over 500 such, and discuss them all in some detail. The problem, as far as these studies directly relate to learners with SLD - and not that many of them do (Imray, Kossovaki and Sissons, 2023) - is that virtually universally, the difficulties are perceived and 'resolved' in purely academic terms.

Numeracy

Let's take success within the subject of Mathematics as an example. I would like to write about the copious number of research articles relating to learners with SLD, but unfortunately, these don't exist. There is however, a large bank of research into Down Syndrome (DS) - noted by Fidler et al (2009) amongst others, to be the most carefully researched of the numerous syndromes - with which we will have to make do. We still however, need to exercise considerable caution when trying to make sense of the research to inform the teaching of those with SLD, simply because the intellectual spread of DS is so wide. That is, because a small number of those with DS can achieve academically, it doesn't mean that all can, yet this is often the message taken from such research.

It is not in dispute that all children with DS have learning difficulties, though the majority might equate to relatively high functioning learners within the framework of this paper, with the range falling between severe and mild intellectual disability (Chapman and Hesketh, 2000). Nonetheless, if we want to regard ourselves as research informed practitioners, we may have to accept that there are a sufficient number of those who have DS, and who also experience SLD or CLD (rarely PMLD), to be pertinent.

Most children with DS experience difficulty with mathematics and fail to achieve adequate mathematics competency. Mathematics competency is critical, as children who demonstrate strong skills with mathematics demonstrate improved adulthood outcomes over children who experience difficulty with mathematics (King et al, 2017, p208).

That '*children who demonstrate strong skills with mathematics demonstrate improved adulthood outcomes*' is not in dispute, but if learners cannot achieve strong skills in the *subject* of Mathematics because of the depth of their learning disability, what then?

You will note here that we have written the subject of Mathematics, which has a capital M to emphasise that it has stand-alone importance. Mathematics with a capital M is very different from mathematics without a capital, because Mathematics represents the *theory* of Maths rather than the functional *practice* of maths. As you read this, you are inevitably using functional, practical maths in scanning left to right, making sure the page is square to your eyes, ensuring that you are sufficiently balanced so as not to fall off your chair. You will have ordered your day and have an idea about the sequences involved, you will have an awareness, loosely or strictly, of the time you have allocated to read. You will have dressed with sufficient clothes to keep warm, or cool, or decent, or comfortable. You will have measured out (however loosely) your breakfast cereal and/or the amount of toast and butter you allow yourself. In reality, it is impossible to do anything that does not involve maths, because maths is everywhere and all around us.

Mathematics with a capital M has been around an awfully long time, but nowhere near as long as mathematics with a lower case m, because we were doing that in the infancy of humans' existence. It is easy to forget that none of the activities described above in relation to functional, practical maths requires any understanding of number; some may require an understanding of quantity, but that is a different matter entirely. The point here is that the practice of maths is *very different* to the theory of Maths, with the latter inevitably bound by strict rules and inviolable conventions that must be remembered *and* understood *and* used abstractly. Further, fluency in number (that is, being numerate) is a necessary precondition to fluency in Mathematics, because number is at the core of measurement, and accurate measurement is at the core of Mathematics. The key questions for any child, young person or adult (CYPA) with SLD therefore becomes, (i) is numerical fluency possible for these learners? and (ii) are there alternative (different) teaching strategies which will enable functional independence without numerical fluency?

To answer these questions, we need to reference how neuro-typical, conventionally developing children actually learn about number, by looking at the Five Principles of Counting, notably established in Gelman and Gallistel's seminal (1978) study. These are:

- **The one-one principle** – one, and only one, unique number tag must be assigned to each item counted.
- **The stable order principle** – count words must be produced in the same order for each count.
- **The cardinality principle** – the final word of a count denotes the total number of items counted.
- **The abstraction principle** – counting can be used on any set of tangible or intangible objects.
- **The order irrelevance principle** – the order in which a set of objects is counted is irrelevant.

What we see here is that counting is much more problematic than merely rote remembering the order that numbers come in. Because the cardinality principle is fundamental, the subject of Mathematics has to be taught, and learned, in an upwardly linear manner. This is represented through a series of building blocks which are dependent upon the establishment of learning the previous block.

Figure 2. Simple example of the linear nature of understanding and progression in number.

Seventh Block	Fractions (the division of one set)
Sixth Block	Division (the subtraction of multiple sets)
Fifth Block	Multiplication (the addition of multiple sets)
Fourth Block	Subtraction (the taking away of sets)
Third Block	Addition (the putting together of sets)
Second Block	Understanding of sets (cardinality)
First Block	Counting (one-one and stable order principles)

If learning the first block is not **completely** established, and in a decimal system we must take this as being **at least** knowing the one-one and stable order principles of counting from 1 to 100, we must be extremely careful about assuming complete counting competency. For neuro-typical (NT) children, cardinality is well on the way to being established by the time they tackle early addition and subtraction (around the age of 6) and we can therefore safely stretch them out of their comfort zones because we *know* that they *will* become fully numerate. Working at levels of incompetence is not necessarily a problem for neuro-typical conventionally developing learners, since they have by definition, sound short and long term memory, good sequential memory, unimpaired working memory, and hugely importantly for cardinality, will inevitably develop a sound understanding of abstract concepts. *It is clear however, that there is no such research, anywhere in the world, which suggests that this is possible for those with SLD.*

What we already know from the 30 plus years of evidence from England's NC is that those with SLD all struggle with counting competency and the older the child is, the less likely they are to achieve sufficient success to enable them to move on to the next block

(Imray and Colley, 2017). That is, we as educators, can assume that NT learners have the capacity to learn on several different levels at the same time because copious amounts of research tells us that this is so. Research with typically developing children shows that cardinality *emerges* at around four years of age (Nye et al, 2001), though we must note that it is not necessarily established then. That is, cardinality is likely to be a moveable feast, which is partially established and develops somewhere *behind* children's counting abilities. Butterworth (2019) notes that those with dyscalculia (without a global learning disability) tend to have core deficits directly related to the understanding of sets, upon which almost everything in number work is built, whereas the vast majority of those with SLD will have severe core deficits related to the earlier skill of counting. As Porter (1999) notes:

*Children, with and without learning difficulties, have to acquire the skills of counting **prior** to being able to demonstrate what it means to count (p85, my emphasis).*

This central point seems to indicate that we mustn't assume that even those working at the higher ends of SLD have cardinality for *all* numbers, though they may have it for the numbers they are able to count to securely and consistently correctly. Remember, to be *secure* in counting, it is not possible to get the count sequence wrong (ever!) so we are probably only certain of restricted cardinality, limited to the numbers CYPA can count to, time after time after time, without making any errors.

To be considered to have grasped the cardinality principle, the learner needs to appreciate that the final number name is different from the earlier ones and that this difference is significant. This not only 'names' the final object, signalling the end of the count, but also tells you how many objects have been counted (numerosity) and this principle may well not be established if the learner merely recounts a collection in response to being asked how many objects there are. Bermejo et al (2004) demonstrated that even repeating the last number name spoken does not automatically indicate cardinality in small numbers. When they asked (NT) children to count a collection of five objects starting the count with the word three, many gave the answer as 7, that is, the last number name they said. These children got the counting (one-one and stable order principles) right but failed to understand that a set of 5 is still a set of 5, even when the count starts at 3.

Cardinality is not a component of counting, counting and cardinality are different things, just as forms and functions or means and goal are different; and that it is number which gives meaning to subitizing and counting. (Bermejo et al, 2004, p381)

This essential truth, that counting has no meaning beyond the number that the child gets right every single time without fail, is one often overlooked by researchers into those with DS. Counting problems are recognised, but there is a long history of assuming that these might be overcome through alternative teaching strategies. As an example, Noda et al (2011) worked on mistakes made by a group of students with DS aged between 12 and 31 when performing additions and subtractions, on the basis that the students' limited understanding of the place value of numbers, impeded their ability to overcome these obstacles. That is, if the learners' understanding of place value could be overcome, they could be moved forward in their Mathematical competence, a view supported by other similar research, such as Gaunt et al (2012) and Bruno and Noda (2019).

Noda et al's baselining of their test group of learners, threw up some interesting misunderstandings.

Figure 3. Answer from a 16 year old student with DS to two operations: $26+3$ and $37-4$. (from Noda et al, 2011)

The image shows two handwritten mathematical problems. On the left, the problem is $26 + 3 = 11$. To its right is a columnar addition: $\begin{array}{r} 26 \\ +3 \\ \hline 29 \end{array}$. On the right, the problem is $37 - 4 = 14$. To its right is a columnar subtraction: $\begin{array}{r} 37 \\ -4 \\ \hline 32 \end{array}$.

We can see here that when presented with $26 + 3$, this 16 year old learner appears to have taken the numbers from left to right and arrived at $2 + 6 + 3 = 11$ and with $37 - 4$, arrived at $3 + 7 + 4 = 14$. When the numbers are presented in tens and units columns, the learner arrives at much more (though not completely) accurate answers. I have emphasised the fact that the learner is 16, because this is highly germane to the argument. That is, the learner will presumably have had at least 10 years to master skills routinely achieved by NT six year olds, and even when looking at place value, moving 1, 2, 3, 4, to 10, 20, 30, 40 is an issue of language rather than Mathematical *understanding* (Imray et al, 2023). This is not just an issue of understanding place value, this is a matter of (i) being able to remember the basic count sequence and (ii) being able to automatically and subliminally understand the relationship of one number to every other number in an entirely abstract sense. Porter (1993) promotes the concept that, even when they can count, those with SLD often have considerable problems with cardinality because the difficulty of making the cardinal count transition is too great an intellectual leap.

It is the significance of the last tag which eludes the child. Rather than its having meaning in terms of the properties of the set as a whole, the question 'how many?' is simply identical to the request to count the items (Porter, 1993, p74).

And the same researcher also astutely notes that:

Taken together research studies have suggested that many children with DS experience particular difficulty learning to count, and that too much emphasis is placed on trying to teach children skills that they find challenging rather than finding other avenues for developing mathematical understanding. (Porter, 2019, p133).

Imray and Hinchcliffe (2014) argue that we might tentatively refer to the *upper* limit of SLD as around Year 1, perhaps stretching into Year 2 (that is, a developmental age of around 6) of a National or Common Core Standards Curriculum. This is because the standards reached by averagely achieving NT 7 year olds in Mathematics, as well as English Reading and English Writing, as described in Standard 6 of England's Pre-Key Standards at Key Stage 2 (Standards and Testing Agency, 2020), are pretty much quite a way above anything that is likely to be achieved by someone with SLD, irrespective of their chronological age.

Here are the standards averagely achieved by NT 7 year olds in England in 2020 for example, with the pupil being expected to achieve all the levels, independently and without prompts.

Figure 3. The Pre-Key Stage Standards for Mathematics. Standard 6 at KS2.

Standard 6 (working at the KS1 expected standard)
The pupil can: • read scales in divisions of ones, twos, fives and tens • partition any two-digit number into different combinations of tens and ones, explaining their thinking verbally, in pictures or using apparatus • add and subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. $48 + 35$; $72 - 17$) • recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships (e.g. If $7 + 3 = 10$, then $17 + 3 = 20$; if $7 - 3 = 4$, then $17 - 3 = 14$; leading to if $14 + 3 = 17$, then $3 + 14 = 17$, $17 - 14 = 3$ and $17 - 3 = 14$) • recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary • identify $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{4}$ of a number or shape, and know that all parts must be equal parts of the whole • use different coins to make the same amount • read the time on a clock to the nearest 15 minutes • name and describe properties of 2-D and 3-D shapes, including number of sides, vertices, edges, faces and lines of symmetry.

The point here relates to the individual learner's *potential* to achieve *fluency* in Mathematics, that is, the level routinely achieved by neuro-typical, conventionally developing 10 year olds, in preparation for their transition from the primary (generalist) educational phase to the secondary (specialist) educational phase. Neuro-typical 10 year olds will not have achieved fluency *yet*, but will be well on their way to achieving it. At the risk of labouring the point, there is absolutely no research evidence to indicate that this potential for fluency is evident in those with SLD and PMLD. Part of this research absence relates to the general obsession with research into the learning difficulties experienced by CYPA with particular syndromes (especially Downs) and spectrum conditions (especially Autism) rather than learning disabilities per se. But of course, the disparate nature of both DS and Autism does not reflect a commonality of learning, merely a commonality of diagnosis, and given that we're talking about education, one would think that the issue of learning would take priority.

Rather like reading, the difficulties that those with SLD have with number lie in a combination of memory - particularly working memory but also sequential, short term

and long term memory - and a massive difficulty in understanding abstract concepts. Numerical and literary fluency are arrived at by the memory being able to consign the overwhelming base requirements to a matter of automatic assimilation. There is no deliberate and conscious thought or counting required to measure off 175 grammes of flour, but one does have to know *all* the numbers (as well as their order) that come before 175 and *all* the numbers (and their order) that come after 175. There is no deliberate and conscious thought or counting required to know that more than £6 change from a £10 note is required for an item costing £3.73, or working out the square metreage needed to cover an area measuring 7metres by 5 metres. In the same way there is no deliberate and conscious thought or phonetic decoding required to *read* this paper, though of course understanding (comprehension) takes more effort.

If you're reading this, I would assume that you share the notion that teaching those with PMLD, CLD and SLD is an extremely serious business. We do not have the right to waste such learners' education trying to achieve the unachievable on the spurious notion that what is achievable for most (or even the vast majority) is achievable for all. The key question therefore becomes, if fluency cannot be achieved, what exactly is the point of continuing to teach Literacy and Numeracy as discrete subjects?

There is a direct connection between the potential to achieve fluency in both literacy and numeracy, and the point of teaching Reading, Writing and Mathematics in the way such subjects are constructed via a National or Common Core Curriculum. There is no dodging this - all teachers are morally obliged to face facts, even if the facts are difficult for some stakeholders.

Decisions on this relate to the age of the pupil, and therefore how long educators have been trying to teach them to count and attain phonetic understanding. In Mathematics, the general principle is that the older the pupil, the less likely they are to achieve counting fluency, and if they can't achieve counting fluency, there is no evidence to suggest that they'll come anywhere near numeric fluency. The same applies with reading; just insert mastering systematic, synthetic phonics and/or reading comprehension. There is unfortunately, no fool proof guide as to when this might be, but the Equals Semi-Formal Curriculum discusses chronological age alarms. That is, if children with SLD cannot get near the levels averagely attained by neuro-typical learners at 7, by the age of 8/9, alarm bells ought to be ringing; if they cannot get near these levels by the age of 10/11, such alarms should be deafening.

All of the Equals Curricula have been written from a perspective that we must stop trying to fix children, stop trying to 'make them whole', stop trying to make them like people who don't have a learning disability. We must stop trying to make them into people like us, who deal with the world in the ways that we deal with the world. We must work with CYPA where they are, not where we might like them to be. We mustn't leave them where they are, we must stretch and challenge, but *accepting* and working within their individual learning disabilities can be the only basis of an effective and meaningful education. If we continue to put our faith in academic progress, which any national or common core curriculum is bound to do, the only solution to the continued narrative of failure to achieve mathematics and literacy competency, is to do more of what learners have already repeatedly failed at. Albert Einstein wasn't the first to note that one can't solve a problem by using the same solutions that caused the problem in the first place; the much older advice, that when in a hole one should stop digging, also springs to mind.

So, moving on to the second part of the conundrum, are there alternative (different) teaching strategies which will enable functional independence without numerical fluency? The key here is to ask what exactly we need number for, and are those who cannot achieve numerical fluency destined to be totally dependent on others?

Here's a list. It's not exhaustive and you may have others to add, but the principles of maximising independence will still apply.

Figure 4. Things that those with SLD (apparently) need numerical skills for.

Shopping	Time	Phone numbers
Budgeting	Timetables	Cooking
Bill paying	Bus numbers	Medication
T.V. channels	Clothes and shoe sizes	Birthdays

Shopping. Given that the vast majority of those with CLD and SLD can count up to 3 and often beyond that number, consistently and successfully, we can be pretty sure that they have cardinality up to 1 and possibly 2. We can therefore teach them as young learners to recognise the one coin that will always buy one snack item such as a can of drink, a bag of crisps or a bar of chocolate - in the UK, that would be a £1 coin. We do not need to be concerned with how much change they receive, merely with the fact that they will (usually) receive some, and the concentration of teaching and learning can now be placed on the *process* of shopping rather than the product. As such the learner will need to acquire a wide variety of skills related to shopping rather than limited skills related to money. These skills will include:

- planning what to buy
- knowing the single coin/note they will need for the purchase(s)
- knowing to get the single coin/note from the school/class banker
- putting their money in their own purse
- putting their purse in their backpack
- assessing the weather in order know how to dress
- putting 'safety' clothes, such as a light coat in summer, a hat in winter, in their backpack
- remembering to put a carrier bag in their backpack
- finding their way to the shop (noted in a separate and equally detailed Equals Scheme of Work under the heading of Travel Training)
- collecting a basket or trolley
- knowing where to find their item
- knowing where the cashier is
- knowing how to queue
- remembering where they've put their money
- handing the item to be purchased and the coin/note to the cashier
- putting the change and receipt in their purse
- taking their carrier bag out of the backpack and putting their purchase in it
- putting their purse in their backpack
- replacing the basket/trolley appropriately
- finding their way back to school

- handing the change and receipt back to the banker
- putting their purse back in their backpack ready for the next shop
- putting their backpack away
- hanging up their coat
- putting their shopping away, or consuming it, whichever is appropriate.

As with shopping, so with the other elements of number; that is, how can we as teachers and curriculum organisers, enable our learners to be as individually independent as they possibly can be.

Budgeting - use cash in notes and coins, even for adults living semi-independently, rather than a debit card, because debit cards are abstract, cash is real.

Bill paying - set up direct debits with help if needed.

TV Channels - set up a limited favourites section with help if needed.

Time - set up an alarm for waking up time, and then estimate and sequence as we all did before accurate clocks were invented in the 17th century.

Timetables - encourage learners to build in routines, so that known journeys are practised over and over again, until learners memorise the sequence of events.

Bus numbers - are numerals rather than numbers. Learners don't need to know 183 and 185, to know that the bus they need is a 184.

Clothes - the same can be said for clothes, shoes and hat sizes. They need to know what size they take, not what the sizes mean.

Phone numbers - can be stored and accessed via a photo.

Cooking - demands the measure of quantity, but quantity is not dependent on number. Think of cups and half cups. In relation to cooking time and temperature, just about anything simple can be cooked at 180 degrees (marked in red on the dial) for 20 minutes (called on a simple sand-timer).

Medication - will probably need some support, but setting up pill-box routines can help.

Birthdays - and other regular events can be set up on an i-pad calendar.

Literacy²

England's English Programmes of Study, under the Statutory Guidance for the National Curriculum (last updated in July 2014) outlines both the purpose of study and its aims. They are

to ensure that all pupils:

- *read easily, fluently and with good understanding*

² This first part of Equals arguments on Literacy and Severe Learning Disabilities is a direct copy of an article previously published by Support for Learning, namely Imray P and Sissons M (2021) **A Different View of Literacy**. Support for Learning. 36 (2) 222-237.

- *develop the habit of reading widely and often, for both pleasure and information*
- *acquire a wide vocabulary, an understanding of grammar and knowledge of linguistic conventions for reading, writing and spoken language*
- *appreciate our rich and varied literary heritage*
- *write clearly, accurately and coherently, adapting their language and style in and for a range of contexts, purposes and audiences*
- *use discussion in order to learn; they should be able to elaborate and explain clearly their understanding and ideas*
- *are competent in the arts of speaking and listening, making formal presentations, demonstrating to others and participating in debate.* (DfE, 2014)

But what exactly happens when pupils are, consistently and over time, unable to express any or at least, the vast majority of the above aims? Are pupils '*who do not learn to speak, read and write fluently and confidently.....effectively disenfranchised.*' as the DfE, (2014) claims?

Why do some children struggle to make significant progress in reading?

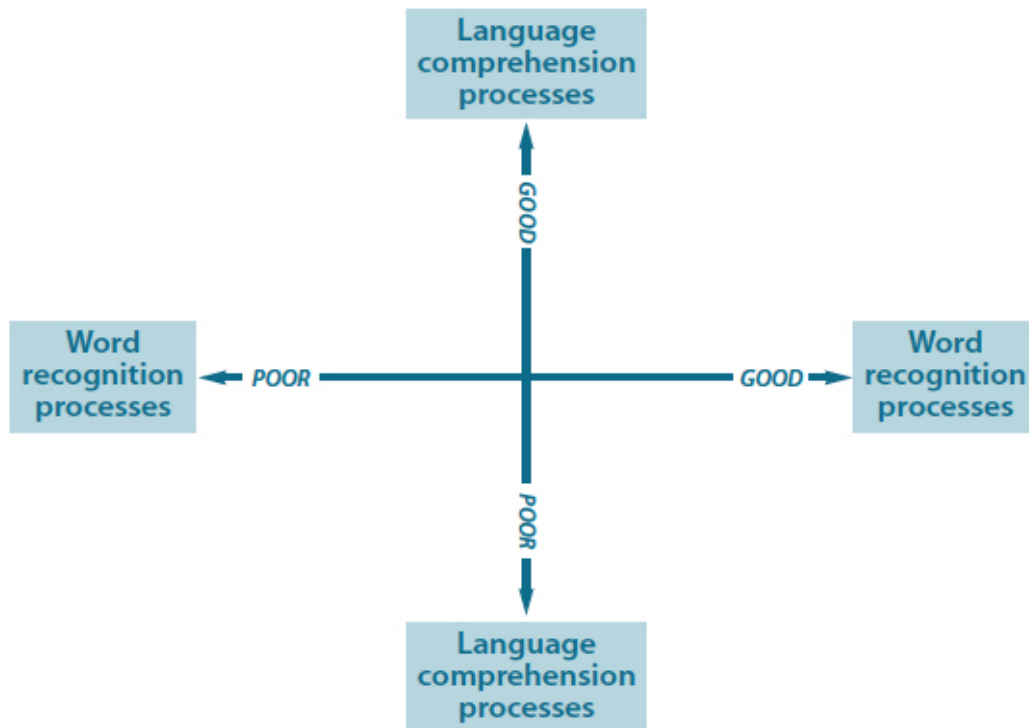
As Stanovich (1986) pointed out some considerable time ago, there is a tendency to believe that the reasons for children, young people and adults experiencing (sometimes quite severe) difficulties with reading are multifarious and complex, whereas in actuality, the conundrum may be much simpler. The Simple View of Reading (Gough and Tunmer, 1986; Hoover and Gough, 1990; Catts et al, 2006) concurs and Rose (2006) referred to this when he wrote his *Independent Review of the Teaching of Early Reading* for the English DfE. We shall do the same here.

In the Simple View model, reading comprehension is the product of two distinct components, namely (i) decoding and (ii) comprehension, each of which makes its own unique and independent contribution (Savage and Stuart, 2001). Both of these abilities are necessary, but neither is sufficient in itself to explain reading ability, where

- (i) decoding is the ability to recognise words presented singly out of context, with the ability to apply phonic rules a crucial contributory factor to the development of this context-free, word recognition ability and
- (ii) comprehension is linguistic comprehension, which is defined as the process by which sentences and discourse are interpreted, given the lexical (i.e. word and vocabulary) information. Really importantly, a common set of linguistic processes is held to underlie comprehension of both oral and written language.

Since it was first proposed, Gough and Tunmer's (1986) Simple View of Reading has increasingly been adopted by researchers working in the field of reading development. In Figure 1 below, the diagram shows that the two dimensions of decoding and comprehension form a cross to emphasise that both word recognition processes and language comprehension processes are essential at all points during reading development and in skilled reading.

Figure 1. The Simple View of Reading

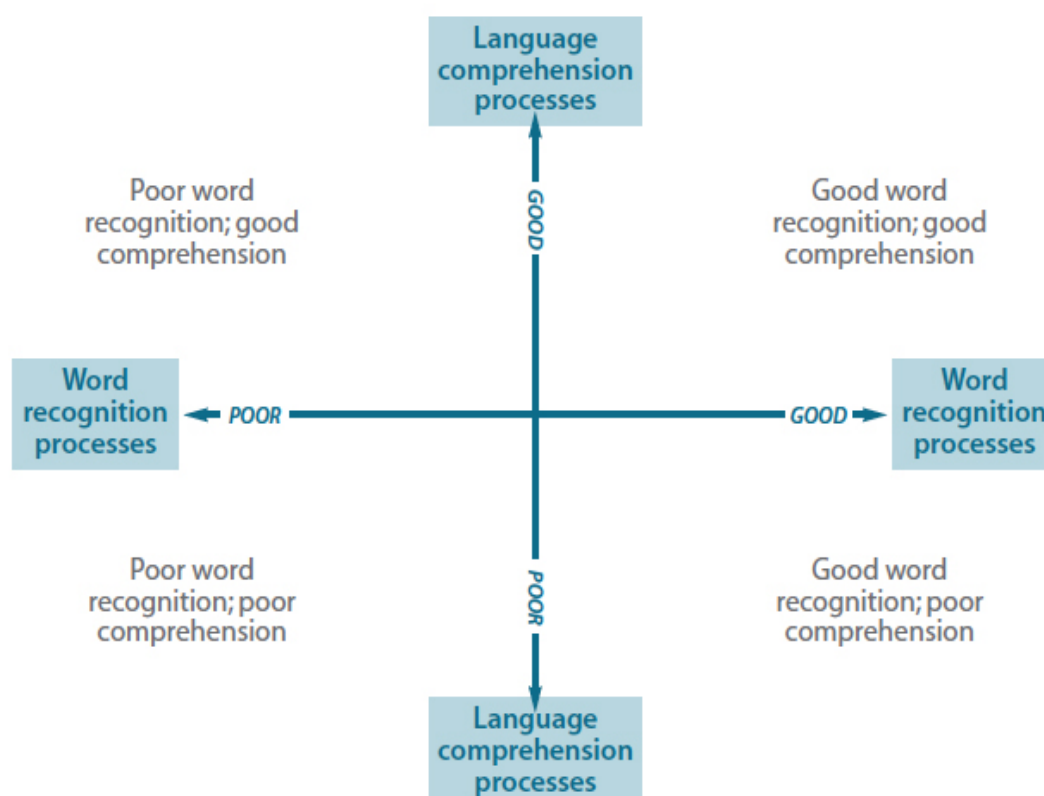


Rose (2006) particularly emphasised that clear differentiation between the two dimensions provides a conceptual framework that:

- (a) encourages teachers not necessarily to expect that the children they teach will show equal performance or progress in each dimension;*
- (b) offers the possibility of separately assessing performance and progress in each dimension, to identify learning needs and guide further teaching;*
- (c) makes explicit to teachers that different kinds of teaching are needed to develop word recognition skills from those that are needed to foster the comprehension of written and spoken language; and*
- (d) emphasises the need for teachers to be taught about and to understand the cognitive processes involved in the development of both accurate word recognition skills and of language comprehension (Rose, 2006, p77/8)*

Taking the Simple View of Reading a stage further we can use the scales (from poor to good) to assign the nature of reading ability into four broad categories; namely (i) good word recognition, good comprehension (ii) good comprehension, poor word recognition (iii) good word recognition, poor comprehension and (iv) poor word recognition, poor comprehension.

Figure 2. Different patterns of performance (Rose, 2006)



(i) Good word recognition, good comprehension. We can simplify this by (obviously!) discarding the top right quarter because good comprehension and good word recognition leads to good readers.

(ii) Good comprehension, poor word recognition. For the purposes of this paper, which is directly related to those learners who are consistently and over time working at considerably below age related expectations, we can also put to one side the top left quarter, because research studies have consistently shown for some time (Spooner et al, 2004; Bishop & Snowling, 2004; Catts et al, 2006; Roch et al, 2011 for example) that children with good verbal understanding (that is, good listening comprehension) but poor lexical skills, generally catch up sufficiently to at least become 'adequate' readers by the time they reach secondary school at Year 7. These are usually children who might be regarded as dyslexic, and who have a specific (rather than a global) learning difficulty. They might always struggle with reading (and writing) and we do not wish to downplay such struggles because they are usually permanent, can be very challenging indeed, and the individuals may always require some level of support. There are however, numerous tried and trusted strategies and individual programmes known to be effective for most. Rose (2006) urges that early identification (as early as Reception if possible) is key in order to best mitigate problems that will only get worse if left, but the essential strategy is through a detailed (if slowed down and individualised) programme of phonic instruction.

(iii) Good word recognition, poor comprehension. The first thing to remind ourselves here is that the conventional view of reading ability has to be defined by a

combination of decoding words *and* reading comprehension. There is after all no point to reading if one doesn't understand what has been read. Any person reading this who has also tried to tackle *A Brief History of Time* by Professor Stephen Hawking will be familiar with this concept! The interesting thing is that the whole book is in English, and most confident readers will know all of the words, or have the decoding skills to look up the meaning of the words they don't know. However, making sense of it, without a highly advanced understanding of quantum physics, is an entirely different matter altogether.

The second thing to note is that numerous studies (Catts et al, 2006; Nation et al, 2010; Clarke et al, 2010; Roch et al, 2013; Copeland et al, 2016 for example) have established that there is a strong and direct correlation between poor reading comprehension and poor listening comprehension. So, the ability to physically read in English is not sufficient to be literate, even if an individual's word reading skills are automatised and their decoding skills are well established. Understanding is crucial, and an individual's understanding of written language is directly correlated to their understanding of spoken language.

Given that the skill of word reading is based on code breaking, one would expect those who are good at following instruction and working within a set of regularly repeated patterns that is phonics, would also be good at word reading. It has long been recognised that children on the autistic spectrum have particular skills in this regard (Grigorenko et al, 2003; Mottron et al 2009, for example). It has however also been very well established (Wing and Gould 1979) that autism is a social condition and affects children, young people and adults (to a greater or lesser degree) in the social activities of communication and interaction (Williams White et al 2007). It would appear that those with high functioning autism (otherwise known as Asperger's) who do not struggle with literacy and numeracy or indeed learning per se, may be able to put their social difficulties aside, effectively compartmentalising social and academic, so that their listening comprehension skills are relatively unimpaired for academic study. However, when autism is co-morbid with a degree of learning difficulty, as it so often is, the results can be wide ranging and often lead to hidden problems in a number of areas. Estimates of the numbers of those with autism who also have a significant learning difficulty vary (and of course we then have the added problem of what might be regarded as significant) but general estimates are that up to 70% of those with an autism diagnosis also have an additional learning disability of some sort (Fombonne, 2005; Pagnamenta et al, 2011).

That is, for those with autism and learning difficulties, there is a tendency towards 'spiky' learning profiles consistently noted by researchers (Bolte et al, 2009; Carpenter et al, 2015 for example) where even fairly simple subtexts and social cues in both listening and reading comprehension can be easily missed or misunderstood. Interestingly, Arnold and Reed (2019) have warned that there is a tendency to underestimate the word decoding abilities of non-verbal children with autism, because reading assessments normally require a verbal response, but more accurate assessments were derived by using a multi-choice, digital assessment model. Whilst this does not address the likely problems with comprehension, it may be that reading potential is hidden when some 30% of children with autism start school as non-verbal or at least minimally verbal (Plesa Skwerer et al, 2015).

The social impairments in individuals with ASD are diverse and involve speech, linguistic conventions and interpersonal interaction. Frequently identified problem areas include impairments in social pragmatics (e.g., turn-taking in conversation and the ability to take the listener's perspective), poor speech prosody (e.g., typical rising and falling of voice pitch and inflection that aids verbal communication), a tendency to dwell on certain topics, difficulty understanding and expressing emotions, and difficulty interpreting nonliteral language such as sarcasm and metaphor. (Williams White et al, 2007, 1858/9).

It is incredibly important to remember that autism is a lifelong condition, and that social difficulties have proved extremely resistant to change. As children with autism enter adolescence, many of the characteristics associated with autism such as language difficulties, may improve but the limitations with social competence tend to persist into adolescence and adulthood (Magiati et al, 2014; Tobin et al, 2014; Volkmar et al, 2014 for example). Kendeou et al (2014) point out that three skills, namely Central Coherence, Executive Functioning and Attention Allocation are all essential characteristics of reading for meaning, and it has been very well established that those on the autistic spectrum are very likely to struggle with all three (Frith, 1991; Bogdashina, 2006; Baron-Cohen, 2008 for example). As Jordan (2001) so eloquently put it, autism is a condition where language and communication can go off in separate directions!

In summary on this section, the key to working with pupils who present as good word readers but poor comprehenders and who continue to struggle with making the levels of progress which their reading skills suggest they should, may lie in using their own personal interests and motivations, rather than continuing with a general programme of education. That is, reading without meaning is largely a useless skill if the comprehension difficulties persist over time. If learners are consistently failing because of their learning difficulties we need to offer a different (rather than differentiated) model and utilise their strengths, rather than trying to persist in changing weaknesses which prove resistant to change.

The Equals Formal English SoW therefore suggests that pupils who consistently and over time present as good word readers but with poor comprehension should be offered a project driven, holistic, process-based teaching model, where the project being studied, the direction of study, and the pace it is being studied at, are led by the learner rather than through a pre-set timetable compartmentalising pre-defined programmes of study. Pupil led learning will inevitably lead to engagement. Although there are those who argue that teachers should not be overly concerned with engaging pupils (Ecclestone and Hayes, 2009 for example) it is, we would suggest, an essential first step for those with global learning disabilities who struggle with learning consistently and over time at or near age related expectations.

Pupil led learning validates an individual's life and interests, and for those on the autistic spectrum especially, this can be a key factor in promoting self-esteem, self-confidence and self-belief. A student may have as many certificates as it is possible to get, but if she doesn't believe in herself, they're hardly worth the paper they're written on. If teachers concentrate on the process of engagement, pupils can be guided towards learning, even though teachers may not be entirely in control of what that learning might be or its future directions. It therefore becomes a central element of the teacher's role to be an essential part of the process themselves by advising, offering suggestions,

negotiating new leads and possible tangents that might be explored. This is not a didactic, *'this is what I'm going to teach you and this is what you're going to learn'* model; this is much more of a learning partnership.

It may be that small group learning is a key element of this process based model for this group of learners. Although many pupils might be resistant to a topic based on other's special interests, negotiations around *'we can study Tim's project today, but we'll look at your project tomorrow'* may well encourage some teamwork. In any event, learners should be encouraged to work in small groups and pool their studies, perhaps by offering choices on particular strands of study following the lego-therapy model. We suggest that the movement towards concentrating on the process of engagement is taken fairly gradually, so that teachers might start with 20 or 30 minutes a day of pupil led learning, building up over time. This approach will be new for pupils as well as staff, and everyone needs to learn how to make the most of it.

An essential part of the teacher's role is to map what learning has taken place. Imray and Hinchcliffe (2014) call this 'retrospective target setting', arguing that when teaching pupils with spiky profiles who are unlikely to learn in an upwardly linear neuro-typical manner, it is impossible to know in advance what someone is going to learn. You can know in advance what you're going to teach, but you cannot know in advance what will be learned.

The process of concentrating on a topic led, engagement model might appear to challenge the concept of a 'broad and balanced' curriculum. It is central that learners are encouraged to engage in physical, independence, play, leisure and creative activities but it is also worth challenging the concept that a typical National Curriculum subject led 'broad and balanced' is the best model for everyone. We wonder whether the likes of Einstein, Mozart and Turner were forced to follow a broad and balanced curriculum at school, and indeed what might have happened to them if they had?

It is recognised that in a mainstream school, the 'teacher' may well be a teaching assistant. School leadership teams must recognise that this role is highly skilled and will need specific support structures and specific training time. Process based teaching is not easy, because there is no week by week, lesson by lesson programme of study to follow. Process based teachers have to be alert to the moment and as much engaged with the learning as the pupil. Indeed it will help considerably if teachers can accept a role reversal being engineered, so that the pupil becomes the teacher and the teacher becomes the pupil!

Poor word recognition, poor comprehension.

The accepted strategies around teaching children to read tend to be based on set building blocks, which takes us through the process of phonological awareness and decoding as the necessary pre-condition of skilled reading. Therefore

*for **most** children, it is highly worthwhile and appropriate to **begin** a systematic programme of phonic work by the age of five* (Rose, 2006, 29, original emphasis).

The point being that for neuro-typical, conventionally developing learners, learning to read and write follows once the establishment of speaking and listening skills have been fully formed. This is however, highly unlikely to be the case with pupils with PMLD, CLD and SLD, since they do not typically learn by listening, they learn by doing. Communication is nearly always subserved by the use of signs, gestures, pictures,

symbols, and by contextual cues which are provided through meaningful, routine activities. This means that learning to 'read' a symbol or a sign or a gesture is an intrinsic part of developing language comprehension and does not follow it. Using words in context is part of learning to communicate and of learning what words are and what they mean. Comprehension, purposeful activity, social interaction and word (or sign or symbol) recognition cannot be teased apart but are all functionally integrated within communicative acts. On this conception of reading, the criticisms made by Rose (2006) against the misleading effects of context and the warnings over conflating comprehension and decoding do not apply. The Simple View of Reading only becomes relevant at the point where the pupil is ready to learn to apply phonic strategies.

For children who struggle with phonic strategies, we strongly advocate that teachers adopt a number of basic and essential 'acknowledgements'. That is, our duty as teachers (whether we be teachers, TAs, parent or carers) is surely to enable children to be the best readers they can possibly be. The goal here is not to 'catch-up', it is for each learner to find meaning in text and to make the best possible use of text, whether that is at the level of single symbols or of connected prose. If we are to help children who consistently and over time, fail to make the sufficient progress in reading due to both poor word recognition and poor comprehension, we must acknowledge:

1. That whilst the phonics model is essential if children are to become fluent readers, not everyone is able to become a fluent reader and a different model (to phonics) needs to be applied.
2. For the phonics model to still be relevant in everyday education, children need to make a considerable amount of year on year progress from Year 1 onwards.
3. That some learning difficulties for some children will form permanent barriers to learning in conventional ways and will therefore become disabling conditions.
4. That the greater the degree of difficulty, the greater the potential level of failure experienced by the child, and persistent failure has long term consequences.
5. That there needs to be a greater emphasis on Communication (with a capital C) for children who consistently demonstrate poor reading and poor comprehension skills.
6. That as far as reading is concerned, less may well be more for those who consistently and over time struggle with both reading and comprehension.
7. That compartmentalising reading, writing, and speaking and listening as areas of communication to be worked on independently of each other doesn't really make sense for pupils who consistently and over time, struggle with all of them. For this population, English (or any other language) has to be regarded as a communicative tool which is best taught and learned holistically.

Let's look at each of these 'acknowledgements' in detail.

1. That whilst the phonics model is essential if children are to become fluent readers, not everyone is able to become a fluent reader and a different model to phonics needs to be applied for this population.

That is, it is axiomatic that the phonics model does not work for every single child; if it did work for everyone, there wouldn't be any poor readers. Further, two very important points arise from this; firstly, it is wrong to automatically assume that this is somebody's fault and secondly it is wrong to automatically assume that all children will eventually be literate. It may not be the fault of the teacher(s) or the teaching assistant(s), or the school or the leadership team or the headteacher or the SENDCo or the SaLT (speech and language therapist). It may not be the fault of the parents or the family or of society at large. The fact of the matter is that a small percentage of children, perhaps as low as 1 or 2 per cent of the whole school population, will never learn to read fluently in the manner described by the DfE's (2014) Statutory Guidance, and that this has always been the case. Such children are likely to have global learning disabilities and the severity of their learning disabilities is marked by the fact that they will not achieve beyond the very earliest levels of the National Curriculum in any subject, no matter how long and in what environment they are taught (Imray and Hinchcliffe, 2014; Imray and Colley, 2017). It is a small percentage, but it is likely that most English mainstream primary schools, quite a number of English mainstream secondary schools and a considerable number of England's special(ist) schools will have such learners on role. These are 'exceptional students' because they are working at levels on the extreme end of performance distribution.

By definition, exceptional students require an extraordinary response from educators – something different from the ordinary, even if the ordinary is good.....Failure to create these explicit structures to accommodate students at the extremes of performance distribution inevitably results in their neglect. They are forgotten. They don't just fail a little. They fail a lot, and their noses are rubbed in their failures. (Kauffman, 2002, 259)

2. For the phonics model to still be relevant in everyday education, children need to make a considerable amount of year on year progress from Year 1 onwards.

There is no doubt that for pupils with SLD, learning to read is complex and difficult, placing considerable demands on short term, long term and working memory, and the process of learning a *sufficient* bank of words along with *sufficient* comprehension skills to enable academic study will be enormously challenging. So, what is sufficient?

Imray and Colley (2017) lay a strong case for 'sufficient' to be considered as the standard achieved by neuro-typical children at the end of Year 6 in Key Stage 2, that is, the level ordinarily reached at the end of the primary phase of formal education. They argue that this is because of the huge amount of compartmentalised written information which children need to ingest in order to be able to succeed at a secondary mainstream level. Reading weaknesses are bound to cause ever increasing problems as the complexity of what is being read also increases.

For many children, this shift to reading for understanding marks the beginning of another stage in learning to read. In this stage, even fluent readers are challenged by the complex cognitive demands of reading comprehension, as texts increase in difficulty and length. (Randi et al, 2010).

A softer line than that adopted by Imray and Colley, might be to assume that assessments need to consider what neuro-typical readers averagely achieve by the age

of 7, in order to fairly estimate each learner's individual potential, whilst still remembering that seven year olds can hardly be described as fluent readers. In this we are aided by England's Pre-Key Stage Standards (Standards and Testing Agency, 2020) which very interestingly, must be achieved in every detail rather than being regarded as best fit.

Key Stage 2. Pre-Key Stage Standard 6 for English Reading (working at the KS1 expected standard)
Word reading The pupil can: • read accurately most words of two or more syllables • read most words containing common suffixes • read most common exception words. In age-appropriate¹ books, the pupil can: • read most words accurately without overt sounding and blending, and sufficiently fluently to allow them to focus on their understanding rather than on decoding individual words² • sound out most unfamiliar words accurately, without undue hesitation. Language comprehension In a book that they can already read fluently, the pupil can: • check it makes sense to them, correcting any inaccurate reading • answer questions and make some inferences • explain what has happened so far in what they have read. ¹ Teachers should compare the books that their pupils read with those provided for the key stage 1 reading test developed by the STA. The sources for the reading test are listed in the copyright acknowledgements in published key stage 1 test materials. ² Some pupils need to read faster than others to understand what they are reading but, as a guide, approximately 90 words per minute is a good indicator of sufficient fluency for a pupil learning to read.

A slight word of caution relates to the suggestion that language comprehension is to be measured against '*a book that they can already read fluently*' since assessors will need to consider the possibility of a book that is well known and has already been read a number of times being rote remembered for comprehension.

Nonetheless, not being able to achieve this standard at age 7 should not of course, be taken as an indication that the child cannot achieve it, but a different view may be taken the older the child is. As with numeracy, this is a matter alarm bells getting louder and for such children, it may be that different rather than differentiated approaches (those advocated in the Equals Formal Curriculum English SoW for example) are required, and the older the child is, the more urgent this different approach becomes.

The second element to this point is not that children who are poor readers and poor comprehenders do not make progress in reading, but how much progress are they likely

to make and over what period of time? Is it likely to be sufficient to catch up and allow them to use their reading skills to access an academic curriculum? Again, as with numeracy, the vast majority of the research relates to children and young people with Downs Syndrome (DS) with the majority regarded as having moderate learning difficulties (Chapman, 2003). de Graaf and van Hove's (2015) findings of differential outcomes of school placement on the development of academic skills in children and young people with DS are in line with other studies (de Graaf et al, 2012; Turner et al, 2008; Buckley et al, 2006; Laws et al 2000; Bochner & Pieterse, 1996 for example) and we are not disputing the correctness of this research. That is, children with DS placed in mainstream schools make better progress across academic measures, but especially in reading, than children with DS placed in special(ist) schools. Indeed, it would be surprising to find research which showed otherwise, since (i) the mainstream school curriculum is specifically designed for this purpose (ii) more time is likely to be spent on literacy and numeracy in mainstream schools (iii) specific one to one support time given to children is likely to be used in these more academic pursuits, especially so given the likelihood that the children will be following differentiated programmes of study.

Unfortunately, research in this area tends not to be concerned with making progress over an extended period of time, or whether the short term progress is worth the effort, time, energy, concentration etc. expended by all concerned, but especially by the pupils themselves. That is, such research tends to spend a lot of time on specific quantifiable (but marginal) gains, without considering the quality of the final product and whether the gains made enable learners to become fluent readers in the long run.

As an example, research on reading in DS has historically offered the view that children with DS are better able to read through remembering whole words as opposed to decoding words using phonic skills (Roch & Jarrold, 2008; Lock, 1999 for example). A frequent interpretation of this tendency is that the children with DS are relying on adequate visual memory skills to build a sight vocabulary rather than using taught phonic decoding skills. Pursuing the theory that expertise in phonic decoding is a better pathway towards reading fluency than whole word recognition, Burgoyne et al (2013) worked with 10 primary aged learners with DS, comparing an 8-week control period, with a 6-weeks specific intervention programme of 1-to-1, 15 minute, daily instruction in phoneme blending.

The Burgoyne et al (2013) study certainly showed statistically significant progress in the short term, but the average improvement using the specifically taught phonics schema was 4.5 additional words per month of daily 1 to 1 instruction. This compared to an average improvement of 2 additional words per month for the same group when they were not receiving the instruction. Yes, this is better, but small amounts of progress working at very early developmental levels with learners with a chronological mean age of 8 years 4 months, is not going to improve their chances of literacy fluency, *unless* such a rate of progress is maintained over time. Unfortunately, the researchers did not return later to check whether this was so.

Nor is this an unusual occurrence. There are no studies which involve marginal gains being made in literacy or numeracy with learners with DS, which revisit the same learners after (say) a year or 2 years or 5 years, to see if the gains made had been built upon. Anyone who has ever worked with CYPA with SLD will know that it is possible to work intensively with learners for a period of time and make significant progress, BUT

that doesn't mean that the rate of progress will be maintained or indeed that even the limited progress made will be retained. This has everything to do with the relationship between learning, memory and the constant need for repetition.

In summary on the degree of year on year progress needed, we may have to face the fact that for some children with SLD, reading presents so many challenges and difficulties that they will never achieve the levels required to read fluently, no matter how much one to one instruction is given. This doesn't mean to say that these children cannot learn, just that they cannot learn to read in conventional ways. If this is so, continuing to teach them in conventional ways, that is, through phonic instruction of any kind, just doesn't make any sense.

3. That some learning difficulties for some children will form permanent barriers to learning in conventional ways and will therefore become disabling conditions.

When discussing children who struggle with both word decoding and comprehension, we need to consider why this might be. Of course, all children are different and there can be no one size fits all in either difficulties or solutions, but we can make informed and educated estimations of likely difficulties. In a longitudinal study comparing three groups of DS children at 10, 14 and 21, Turner et al (2008) noted that although mainstream schooling and positive parental attitudes seemed to have a marginally positive effect on academic success of those with DS, by far the biggest and most consistent predictor of academic success was the level of intellectual impairment. Imray et al (2024) consider that the spectrum that is severe learning disabilities is much wider than we might have previously thought and certainly wider than the DfE (2012) definition, whilst Imray and Colley (2017) argue exhaustively that the defining learning characteristics of a severe learning disabilities (SLD) spectrum, effectively form barriers to learning that we must acknowledge if we are to make a success of education for all.

Barriers such as difficulties with abstracts, working memory, communication, thinking and problem solving and generalising previously learned experiences, work together and upon each other, to make learning extremely (or severely) problematic. Further, they are not open to being worked on in isolation but present holistically so that the solution in turn lies in adopting an holistic (rather than compartmentalised) approach to teaching. Educationalists have considered the difficulties with working memory as soluble and there have been a number of studies which seem to affirm this (Cowan and Alloway, 2008; Alloway et al 2009; Klingberg, 2009; Alloway and Alloway, 2015; for example). However, such strategies that have been researched will be enormously problematic for those with SLD since they all rely on a solid base of either language (spoken or written) and/or an understanding of abstracts, in for example, recalling a series of unrelated and de-contextualised pictures in ever more complex patterns. They further all note the inter-relationship between difficulties with working memory, short term, long term and sequential memory, poor concentration and attention and poorly developed problem solving skills. It is noticeable that Alloway and Alloway (2015) go into some considerable detail with case studies on specific strategies that might be suitable for specific learning difficulties, but learning difficulties of the levels experienced by those with SLD are not mentioned.

Roch et al (2011) speculate that the essential problem with reading for those who are poor readers and poor comprehenders lies in the potential overloading of both short term memory and working memory. Davies (2015) argues that working memory is

extremely fragile, has a limited capacity, can lead to memory failure if pressed too hard, and is heavily reliant on the ability to maintain concentration and attention to the task on hand. Such overload and/or distraction leads to information being irretrievably lost from the working memory (Gathercole and Alloway, 2008), yet a sound working memory seems to be necessary for the control of attention, so that the two capacities can be seen to be inseparable (Klingberg, 2009). Swanson and Jerman (2006) note that the majority of studies suggest a correlation between memory deficits and difficulties in both maths and reading, since performance depends on speedy and efficient retrieval from the long term memory, and good temporary storage is crucial when working out mathematical problems and word de-coding. Further, they argue that poor recall of facts from memory increases the cognitive demands of a task as it then has to be calculated, which in turn puts additional pressure on problem solving strategies.

Working memory and learning are inseparable. The importance of working memory in learning cannot be underestimated as it is a core cognitive process and predicts academic learning. Learning involves acquiring new knowledge and skills, however it is vital to remember and retain what we have learned if we are to be able to use it again and memory is the process by which we achieve this. Learning is a step-by-step process, based on the success of successive learning tasks. (Davies, 2015; p3).

Most importantly, it is essential that we accept that children with global learning difficulties are present in mainstream schools and that the level of learning difficulties which these pupils display are not all open to remediation. That is, we cannot teach the child, young person or adult with SLD to have a better memory and be a better learner. Baddeley et al (2009, p69) are clear that '*learning and memory are interrelated and ideally, should be discussed together*' and there is no evidence of any description to suggest that children with SLD become adults without SLD. Having a global learning difficulty is for life in the same manner that having autism is for life. Surely the role of education is to make the very best of what we have.

4. That the greater the degree of difficulty, the greater the potential level of failure experienced by the child, and that persistent failure has long term consequences.

The term 'Matthew Effect' was first coined by Stanovich in 1986 and refers to a verse noted in Matthew 25:19

For everyone who has will be given more, and he will have an abundance. But the one who does not have, even what he has will be taken away from him.

This is especially pertinent to reading; the rich get richer and the poor get poorer! Although there have been studies which downplay the Matthew Effect (Cain and Oakhill, 2011 for example) it is very important to note that such studies were not measuring those with a diagnosis of reading difficulty. It seems self-evident that those who struggle to read are less likely to enjoy reading for its own sake and will thereby read less, so that the gap between good reader and poor reader grows with time. We are sure that all teachers have an understanding that

children who experience repeated failure can develop the perception that achieving success in learning is completely outside of their control, no matter what they do (Frederickson and Cline, 2015, p384).

This issue is further exacerbated by the increasing paucity of age-related reading material as children get older which is highly likely to mitigate against reading for pleasure. When the degree of learning difficulties are so severe that teenagers are reading at levels typically associated with Year 1 or 2 pupils, it is hardly surprising that as they get older, they are less motivated by the works of fiction available.

5. That there needs to be a considerably greater emphasis on Communication (with a capital C) for children who consistently struggle with poor reading and poor comprehension.

We have taken the view that for this population, English as a subject must be much more holistic in nature, and we see no point in overtly dividing English (or Literacy for that matter) into reading, writing, speaking and listening. The Equals Formal Curriculum English SoW has at its centre Narrative (Grove, 2013; Bunning et al, 2018) which takes the line that the ability to tell a story (not to read, not to write, but to tell, to verbally or otherwise narrate) lies at the heart of humans as social beings, and without this essential skill, we are lesser beings because we cannot fully involve others in our lives and ourselves in other's lives. Within a neuro-typical, conventionally developing framework, this ability is largely taken as given, so that the average language skills of the average 5 year old.....

'.....are typically considerably advanced. They understand much of what is said to them and they can express their ideas, feelings and needs in ways that others can comprehend. Their language processes are established and though there is much still to develop, particularly in the areas of vocabulary and syntax (grammar), they can be considered to be proficient language users' (Rose, 2006; p88).

This is however, highly unlikely to be the case for those who go on to experience problems with both decoding and comprehension. Clarke et al (2010) suggest that children who show weaknesses in reading comprehension benefit from additional oral language training and for Nation et al (2010) early oral language weaknesses place children at risk of later reading comprehension impairments, again demonstrating the clear link between listening comprehension and reading comprehension noted in other studies. Non-written communication is likely to improve verbal understanding (Kendeou et al, 2014) because *'oral and written language comprehension depend on the same underlying language comprehension system'* (Rose, 2006, p80). Clearly the degree of difficulty experienced will be largely dependent on the ease with which learners can communicate using expressive verbal communications, whether such communications use assistive technology or not.

6. That as far as reading is concerned, less may well be more for those who consistently and over time struggle with both reading and comprehension.

That is, it is better for the learner to be good at a few things than to struggle with lots of things and the key may therefore lie in the identification of (i) what is

motivating for the pupil (ii) what can be achieved, and when these are combined (iii) what is really useful for the individual pupil. Teachers (and TAs and parents and carers) should therefore concentrate on the recognition, recall and contextual use of single words and/or symbols and/or photographs in combination with contextual and repetitive practicing of their effective use. In this setting, sentence structure and syntax are unimportant, and whilst they may be worked on occasionally, for example in writing personal narratives, they should not be considered as a matter of routine. Teachers should concentrate on what motivates and excites the individual learner and the skill of teaching is largely a matter of finding out what motivates and excites and trying lots of different things. We don't know what we don't know, so schools need to follow an experimental model and adopt a process based methodology, rather than teaching to a pre-set order of learning defined necessities.

The consequence of our obsession with both SMART targets and hitting predicted outcomes is a pressure on the teacher to promote rote learned responses in order to fulfil the prediction and tick the necessary box (Riddick, 2009). This might be hitting the target but it is certainly missing the point. Learning for those on the SLD spectrum will be holistic in nature, and as much about process as product. The focus on product is likely to lead to a lowering of expectation, since the focus on the target risks all sorts of incidental and accidental learning being missed (Imray, 2013). In practice, learning will take place at the learner's pace, not the teacher's, rather like play with very young babies. We cannot instruct a baby to play, but we can facilitate opportunities for doing so. We cannot predict when a baby will reach a particular milestone, we can merely watch out for it and record it, if and when it happens. This is the nature of play as a process.

The ubiquitous nature of individual education plans (IEPs) or variations on the theme of setting specific, narrow, individual targets for learners, so much part of education for so very long, also of course militates against a process based approach.

Planning is considered to be about setting specific single learning objectives for which specific strategies are selected. There is no place for teaching which has multiple and related objectives which call for inter-connected strategies. Neither is there a place for general teaching strategies where there are open-ended objectives. (Corbett and Norwich, 2005; p22)

As long as curriculum initiatives are based on normative development, artificial and irrelevant milestones will be marked up as key to the development of the child. This is evident in all UK National Curriculum subjects, but particularly in English and Maths and even more particularly in Numeracy and Literacy. So for example, much is made of mark making as a milestone towards independent writing, but time spent within this milestone is only time well spent if predicted outcomes can reasonably encompass the achievement of functional writing. When they cannot, time spent mark making as a useful activity (rather than say art, as a creative activity) is time ill spent because it will lead to nothing.

This is also entirely irrespective of the time given over to the exercise, because the key word here is '*functionally*' literate and numerate. The reality is that the level that can be achieved at the opening levels of the UK National Curriculum in literacy and numeracy, that is, the level achieved by a neuro-typical 5 or 6 year old, is very low indeed and may well not be worth achieving if this is at the expense of say, functional independence.

There is only so much time in the school day and we have to be very mindful of not wasting it, especially for those with learning disabilities who will obviously learn at a much slower pace and need considerably greater levels of repetition and over-learning.

There is much talk of redoubling our efforts towards '*bridging the gap*'. Taking England as an example, which has been formally educating those with SLD since 1981, forty plus years of trying has seen no progress. The gap has not been bridged. Perhaps we need to face the truth that the gap is not bridgeable. There are those who, because of the severity and complexity of their learning disabilities, cannot and will not become literate to a degree that enables them to utilise their skills every day and in every moment of every day.

It is ironic that those who deride the 'medical model' of disability, are forcing teachers to adopt a true medical model of cure. This pupil struggles with reading and writing, we must redouble our efforts, we must not give up, we must not espouse ableism where only the able are valued, we must assume competency. This means that not only are we diagnosing, we are also intent on effecting a cure. Of course, if a pupil has the potential to be literate, we must stretch every sinew to help the pupil achieve that goal, but for a small percentage of the school population, that might not be possible, and (i) not recognising and (ii) not accepting this as a truth can be enormously detrimental to the individual. In the world of global learning disabilities, we have become obsessed with what a person cannot do rather than concentrating on what a person may (with sufficient education time) become able to do.

Surely, being unable to do something does not devalue a person's life. People are not more or less valuable as human beings because they can or can't do something. Ableism as maltreatment of people because of their lack of ability has no place in a humane society. Valuing what people can do, however, is an important part of humane treatment of people with disabilities. A person's ability to do something valued makes that person better off. Kauffman (2022).

The idea that functional literacy and numeracy is achievable for all follows two entirely erroneous assumptions, namely (i) that what is good for one is good for all and (ii) that those on the SLD spectrum learn in the same way as those who develop intellectually in a neuro-typical and conventional manner, just slower.

7. That compartmentalising reading, writing, and speaking and listening as areas of communication to be worked on independently of each other doesn't really make sense for pupils who consistently and over time, struggle with all of them. For this population, English has to be regarded as a communicative, social and relational tool which is best taught and learned holistically.

The standard practice and indeed purpose of compartmentalisation as a teaching tool is necessary within the National Curriculum model because of the huge amounts of information needed by pupils as they move through the years, especially evident in secondary (post 11) education. In England's primary schools there is generally, very little compartmentalisation, except for English and Mathematics, where explicit instruction in the compartmentalised structures of literacy (phonemes, graphemes, digraphs, split digraphs, syntax etc etc) and numeracy (counting, addition, subtraction, division, multiplication, place value, algebra etc etc) leaves those who struggle to keep pace, floundering even further. We have therefore consciously taken the view that for

this small but significant group of learners, English as a subject should involve itself exclusively in improving the receptive, expressive and social communicative abilities of those who learn it.

In conclusion to this particular section, there exists in England at least, and we suspect in many other parts of the world, a very deep rooted educational fear of a return to the ineducable arguments that permeated formal education until the 1970's. This may in turn, have driven the philosophical stance taken when presuming competence, as in the statement '*No student is too anything to be able to read and write*' (Yoder, 2001). The trouble with presuming competence is that when it's not there, teachers are in considerable danger of constantly teaching at incompetency levels, and we fail to see how that can benefit anyone with learning difficulties. Further, statements such as Yoder's tend to seek justification by avowedly working within '*an evidence based approach to support both emergent and conventional literacy users*' (Erickson and Koppenhaver (2020), for example). We are however, not aware of any evidenced based approach that suggests that it is possible to teach those with severe and profound learning disabilities to be literate, unless literacy is being defined at an extremely low level. Of course, both reading and writing are abstract words because they are relative, and one could therefore impute that because a child can read and/or write one word (or 10 or 50 or 100) she can read and/or write, and we would have difficulty arguing with this. At the beginning of the literacy journey, *all* children are incompetent, so we certainly should presume the potential for competence for all in the first instance, but our problem with the notion lies in continuing, ad-infinitum, to presume competence to a literacy level attained by neuro-typical, conventionally developing learners, when all the evidence tells us otherwise.

For that small group of learners who are consistently and over time working considerably below age related expectations, that is, those who have a global learning disability, learning to read a word or a symbol or a sign or a gesture is an intrinsic part of developing language comprehension and does not follow it. Using words in context is part of learning to communicate and of learning what words are and what they mean. Comprehension, purposeful activity, social interaction and word (or sign or symbol) recognition cannot be teased apart but are all functionally integrated within communicative acts. When working with such learners, context and motivation are crucial because individual word meanings may not be understood without them.

When learning is so very, very challenging, the heart of education should not be about making minor gains or tinkering with the surface, but we might look instead to adopting a Capability Approach. Our efforts as teachers can then revolve around enabling such learners to be the best they can be and do the best they can do in areas that are individually motivating and personally valued (Nussbaum, 2011). Reading and writing do not need to be the dominating and constantly perplexing influences they are for so many with global learning disabilities, but can now become another part of the communicative process, when Communication (with a capital C) rather than Literacy (with a capital L) is the main goal. Pupils can then be concerned with ensuring progress in communicating independently, fluently, maintaining their skills over time and increasing their ability to generalise such skills over an increasing range of contexts, situations and with a wider range of people (Sissons, 2024). Schools can in turn,

concentrate on teaching what pupils can learn that will enable them to communicate freely and effectively, maximise their independence and control their lives.

Writing.

We believe that it is not a contentious issue to suggest that writing is much more complex than reading for those with SLD. This is mainly because the writing process puts considerably greater pressures on working memory in that there are several activities that need to take place concurrently. These various activities include

- Knowing what you want to say
- Remembering what you want to say in the time it takes to write it
- Word-finding
- Spelling
- Letter forming
- Letter sequencing
- Exercising the fine motor control to accomplish the act
- Word sequencing within a grammatical structure, using established rules relating to syntax and morphology
- Reviewing what has been written to check on spelling, syntax errors, meaning and sense.

This means, as with any multi-tasking activity, that an incredible amount of information has to stay in one's head, that is, it remains in the abstract. Once again, as with Mathematics, the combination of retaining abstract information and the necessity of a high functioning working memory come into play, every single time we write something down. Graham et al (2016) conducted a meta-analysis comparing the writing performance of students with learning difficulties to their typically achieving peers. From the 53 published studies they looked at, they found that most commonly, students with learning difficulties struggled with

- conventions of spelling, grammar, and handwriting
- writing quality
- organisation
- vocabulary
- output
- genre elements
- sentence fluency

As with the Mathew Effect in reading, the issue of motivation to write was also a factor, but significantly less so than the problems noted above. It is however, easy to see that that motivation difficulties might have been masked as a result of a reward system being put in place. We believe that it has long been established that intrinsic motivation is a much more effective and long term rationale for academic achievement than external rewards (Wilson and Corpus, 2001, for example).

Needless to say, the act of creative writing will be heavily correlated to the pupil's abilities in reading. Fitzgerald and Shanahan (2000) argue strongly that researchers and educators should focus on the shared thinking that underlies both reading and writing, rather than separately focusing on a student's reading and writing skills. This suggests a

much more holistic planning and teaching approach where reading and writing form a part of a general focus on learning.

(A compartmentalised) approach encourages unnecessary, and perhaps inefficient, instructional separations and may lead to unnecessary and potentially misleading duplications of effort (Fitzgerald and Shanahan, 2000, p48)

Further, the repetitive practicing of copy writing should be viewed with a great deal of suspicion for those who consistently and over time struggle with comprehension. Although writing creatively will tend to mirror the pupil's strengths and weaknesses in reading, it is perfectly possible to copy write without knowing how to read. It is after all, very tempting to get children to copy things out, because it looks as if the child is succeeding, but if comprehension is not established, she might as well be writing in Mandarin. This is doubly true for those who consistently and over time struggle in reading *and* comprehension.

As with reading, it is a useful exercise to check against Standard 6 of England's English Pre-Key Stage Standards (Standards and Testing Agency, 2018). Although this standard comes within Key Stage 2, it is the standard expected of neuro-typical conventionally developing children by the age of 7.

Key Stage 2. Pre-Key Stage Standard 6 for Writing (working at the KS1 expected standard)

Composition

The pupil can, after discussion with the teacher:

- write simple, coherent narratives about personal experiences and those of others (real or fictional)
- write about real events, recording these simply and clearly
- demarcate most sentences in their writing with capital letters and full stops, and use question marks correctly when required
- use present and past tense mostly correctly and consistently
- use co-ordination (e.g. or / and / but) and some subordination (e.g. when / if / that / because) to join clauses.

Transcription

The pupil can:

- segment spoken words into phonemes and represent these by graphemes, spelling many of these words correctly and making phonically plausible attempts at others
- spell many common exception words*
- form capital letters and digits of the correct size, orientation and relationship to one another and to lower-case letters
- use spacing between words that reflects the size of the letters.

* These are detailed in the word lists within the spelling appendix to the national curriculum (English Appendix 1). Teachers should refer to these to exemplify the words that pupils should be able to spell.

Not being able to achieve this at age 7 should not be taken as an indication that the child cannot achieve it, but once again, a different view must be taken the older the child is.

Conclusion

There is now, considerable evidence informed research to be certain that CYPA with PMLD, CLD and SLD can and do learn and make progress over time (Imray et al, 2024). The rates of progress will vary from learner to learner, but as long as the curriculum is flexible enough to change to fit each learner and the process of intrinsically engaging each learner is at the centre of the curriculum, progress over time will occur.

There is also however, sufficient evidence that the profundity, complexity, severity and multitudinous nature of the learning disabilities experienced by CYPA with PMLD, CLD and SLD (Lacey, 2009; Ndaji and Tymms, 2009; Imray and Hinchcliffe, 2014; Lacey and Scull, 2015; Imray and Colley 2017) militate against such populations being able to attain *sufficient* academic progress that would allow *any* national curriculum to be considered to be a meaningful and purposeful experience.

We repeat (because repetition is the key to learning!) those with profound, complex and severe learning disabilities, learn differently to neuro-typical, conventionally developing learners. If they learn differently, we have to teach them differently and teach them different things. The Equals multi-tiered curriculum approach aims to do just that, and has been written specifically to act as a base model for schools to follow and (if they feel it necessary) adapt as they wish. Continuing to follow a national curriculum model, however differentiated, however well taught, and whether it is taught in a mainstream or a special school setting, only has hope to commend it. Hope is an admirable quality, but surely insufficient to be the over-riding basis of any child's education.

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