Developing the capacity to recognise the capabilities of pupils with PMLD, to promote learning opportunities and to reduce isolation

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Abstract

This research focused on exploring whether Quest for Learning materials, developed originally in Northern Ireland, could be used as a basis for understanding the capacities of learners with Profound and Multiple Learning Difficulties in a Special School in England. This research is occurring at an opportune time as the results of a recent government report, the Rochford Review on statutory assessment arrangements for learners operating below the standard of the national curriculum has provided an impetus to explore alternatives to the P-Scales, which have been used to report on the progress of these learners. The Quest for Learning Materials offer an opportunity to potentially work towards a broader range of more relevant learning goals for learners, and identify and celebrate the capacities and progress that these learners can make in educational settings.

The research, was conducted in a class catering for learners with Profound and Multiple Learning Difficulties. Video recordings were made of regular activities with 5 learners in the classroom, to assess whether the 43 milestones detailed in Quest for Learning could be meaningfully used to explore the capacities of these learners. Over 40 videos of each learner, recorded across an entire school year, were coded by the researcher. A subset of 10 videos for each learner was also independently coded by a member of staff in the School.

Findings indicated that a variety of Milestones could be identified for each learner, with individual profiles emerging that showed the capacities of learners. A comparison of the coding between the researcher and the member of staff demonstrated a high degree of inter-rater reliability. These findings provide clear evidence that the Quest for Learning materials could be a useful tool to use for schools to address the recommendations from the Rochford review.

Introduction

The main impetus for this research is the lack of an appropriate, research-based curriculum for pupils with PMLD. This has historically been an issue, as this group of pupils were deemed ineducable prior to 1970 in the UK (Male & Rayner, 2007). Even though there is now access to education, questions remain about what expectations and opportunities there are for this group of learners (Gray and Chasey, 2006). It has been stated that learners with PMLD *"are entitled to access a curriculum and assessment framework which is fit for purpose and meets their specific needs – there is little benefit or increase in entitlement if they are included in structures that fail to do this."* (Qualifications and Curriculum Group, 2006, p. 46). Imray and Hinchclife (2012) summarise some of the debates that have arisen around what type of curriculum meets the needs of learners with PMLD and SLD, highlighting some of the negative impacts (particular the commentary of Ware and Healy, 1994, Barber and Goldbart, 1998) of the national curriculum on teaching and learning for learners with PMLD. In particular, they engage with the work of Lewis and Norwich (2000) in relation to whether specialist pedagogy is required for learners with special educational needs. Imray and Hinchcliffe (2012, p. 151) state:

"We contend that pupils with profound and multiple learning difficulties are highly unlikely to learn to communicate, eat, reach out, make choices, proactively engage with others, and so on, effectively unless 'distinct kinds of teaching' are used."

Since 1998 (Imray and Hinchcliffe, 2012) P-Scales have set out a range of "performance attainment targets" (DoE, 2017, p. 3) for learners who are working below National Curriculum Levels. The P Scales are numbered 1 through 8, with subdivisions (e.g. P1i and P1ii) used in P1 through P3 (see table 1). The P-Scales are divided into a range of standard curriculum areas; however it is worth noting that the levels are fairly generic from P1 to P3, with distinctions in P Scale descriptors across curriculum subjects only really emerging at P4. Imray and Hinchcliffe (2014) cite a range of authors who note that P-Scales (and alternative measures such as Pivots and B Squared) as a linear system, aligned with eventual academic subjects, that may not be achievable for learners with PMLD, is inappropriate. McDermott and Atkinson (2016) cite Donnelly (2005), who highlighted that the highly academic subject driven nature of the P-Scales might detract from a focus on more important areas of learning and developmental targets, as they *"were seen as less important than attempting to measure 'experiences' loosely linked to curriculum subjects which were unlikely to move learners on."* (McDermott and Atkinson, 2016, p. 10). Ndaji and Tymms (2009) raise similar concerns. McDermott and Atkinson (2016) also cite Martin (2006), who notes that P Scales do not prove helpful in looking at progress at any degree of granularity, as they are best set up to measure progress across a key stage, rather than on a yearly basis.   Making a similar point, Barber and Goldbart (1998, p. 113) note: *'... for those individuals who consistently fail to show*

measurable progress on conventional assessments, a different model of progress is required. It is not that these individuals cannot make progress, but we would argue that the instruments by which progress is measured do not suit the people whose abilities are being measured.'

P-Scale Level	Descriptor
P1 (i)	Pupils encounter activities and experiences
P1 (ii)	Pupils show emerging awareness of activities and experiences
P2 (i)	Pupils begin to respond consistently to familiar people, events and objects
P2 (ii)	Pupils begin to be proactive in their interactions
P3 (i)	Pupils begin to communicate intentionally
P3 (ii)	Pupils use emerging conventional communication

Table 1. P1-P3 (source, DoE, 2017)

Schools in England have been legally bound to report student attainment in the form of P-Scale data. In the last decade, initiatives in Wales (Routes for Learning) and Northern Ireland (Quest for Learning), where have tried to provide assessment tools which are more exact than what is otherwise currently used in schools in the UK (e.g. P-scales). These initiatives have arisen due to a variation in terms of legal obligations around reporting P-Scale data.

In 2015, a review was announced to explore statutory assessment arrangements for pupils working below National curriculum (Rochford, 2016). Speaking of P-Scales, which had previously been used to assess these learners, the report stated:

"The group considered whether P scales remain fit for purpose and whether they are the best way of assessing pupils with SEND. It concluded that, given the range of problems and challenges associated with P scales, it would be better to stop using them and develop a new approach to assessment that is more appropriate for the varying needs of pupils working below the standard of national curriculum tests, better aligned with the new national curriculum, and allows for more fluid progression onto wider forms of statutory national assessment." (Rochford, 2016, p. 5.)

They specifically criticise how assessment tools such as the P-Scales have *"come to be used as a curriculum restricting the kind of creativity and innovation that should be used to engage these pupils and to tailor teaching and learning to their unique needs"* (Rochford, 2016, p. 3)

They suggest in place of this:

"Creating a statutory duty to assess pupils who are not yet engaged in subject-specific learning against the 7 areas of engagement (responsiveness, curiosity, discovery, anticipation, persistence, initiation and investigation) will ensure schools give appropriate attention to the development of concepts and skills that are pre-requisites for progressing on to subject-specific learning." (Rochford, 2016, p. 6)

In addition to this, 10 recommendations were produced, 3 of which are particularly relevant:

- *6. Initial teacher training (ITT) and Continuing professional development (CPD) for staff in educational settings should reflect the need for teachers to have a greater understanding of assessing pupils working below the standard of national curriculum tests, including those pupils with SEND who are not engaged in subject-specific learning.*
  …
- *8. Schools should work collaboratively to develop an understanding of good practice in assessing pupils working below the standard of national curriculum tests, particularly across different educational settings. Schools should support this by actively engaging in quality assurance, such as through school governance and peer review.*

- *9. There should be no requirement to submit assessment data on the 7 areas of cognition and learning to the DfE, but schools must be able to provide evidence to support a dialogue with parents and carers, inspectors, regional schools commissioners, local authorities, school governors and those engaged in peer review to ensure robust and effective accountability.*

(Rochford, 2016, p. 7)

This move away from a strict, linear system allows for exploration of the alternative models set up in Wales and Northern Ireland, to see if they are fit for purpose in light of the recommendations set out above.

Routes for Learning

Routes for Learning was developed by a range of academics and a working group of teachers, in conjunction with the Welsh DfE's Qualifications group in Cardiff. A fundamental premise for Routes for Learning is that learners with PMLD, being a heterogeneous group, will follow a range of different developmental pathways. This group of learners, who display atypical development, require a flexible assessment model to capture the different rates and routes by which this group of learners may attain typical developmental goals (see Figure 1). Lacey (2009) notes that Routes for Learning focuses on the major developmental milestones capture developments in the first year of life for typically developing infants, and does not necessarily capture some that may be identified below or beyond the 45 milestones set out in Routes for Learning (for example, Uzgiris and Hunt, 1975). Major characteristics of Routes for Learning are:

- A set of key developmental milestones (yellow boxes: notices stimuli, responds consistently to one stimulus, contingency responding, contingency awareness, object permanence, selects from

two or more items, initiates actions to achieve desired result[exerting autonomy in variety of contexts]). These are supported by more discrete milestones.

- Different pathways that might represent common trajectories of development, focusing on different aspects: a main cognitive route, main communication route, and two alternative routes. While there are different pathways, it is expected that learners should all achieve the key developmental milestones set out in the previous point.

- Although the routemap is set out in a broadly linear way, with simpler milestones at the top, and given lower numbers, compared to more complex, higher numbered milestones at the bottom of the page, it is recognised that there is not one route: one does not for example move from milestone 3 to milestone 4(with alternative routes to milestones 6 and 9 suggested)
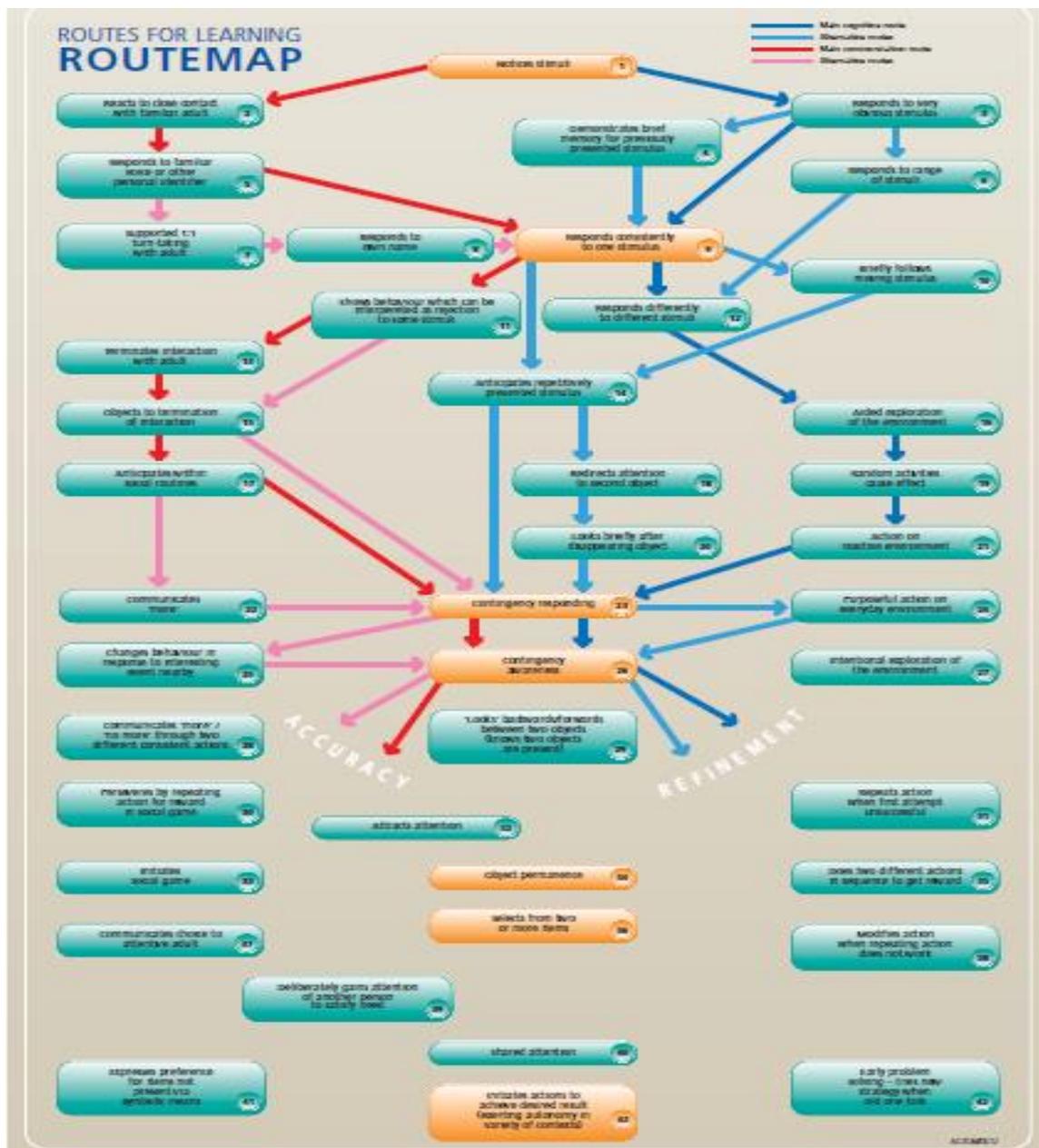
Figure 1. Routes for Learning Routemap

The routes for learning materials also includes a range of guidance on strategies and teaching approaches, both generally, and to support the development of particular milestones.

Quest for Learning

Quest for Learning was developed in Northern Ireland by the Council for the Curriculum Examinations, and Assessment. They directly acknowledge the major influence of Routes for Learning in the design of Quest for Learning. Indeed, in PMLD link, it is noted that *"Penny Lacey describes Quest as derivative but more finely honed"* (Ashdown, 2014, p 4.), when compared to Routes for Learning.

The goal of Quest for Learning is framed in very positive terms, as it involves:

"Acknowledging and celebrating the different abilities and achievements of those learners with the most complex needs, 'rather than trying to fit them into an existing framework not developed with these needs in mind." (CCEA, 2006; pp3)

Like Routes for Learning, Quest for Learning identifies a series of developmental milestones, 43 in this case (see figure 2). The seven green milestones are identified as key milestones. There are also a group of social interaction milestones (coloured blue) and cognitive development milestones (coloured yellow). Again, like Routes for Learning, it is not expected that learners will progress along these in a simple, linear manner.
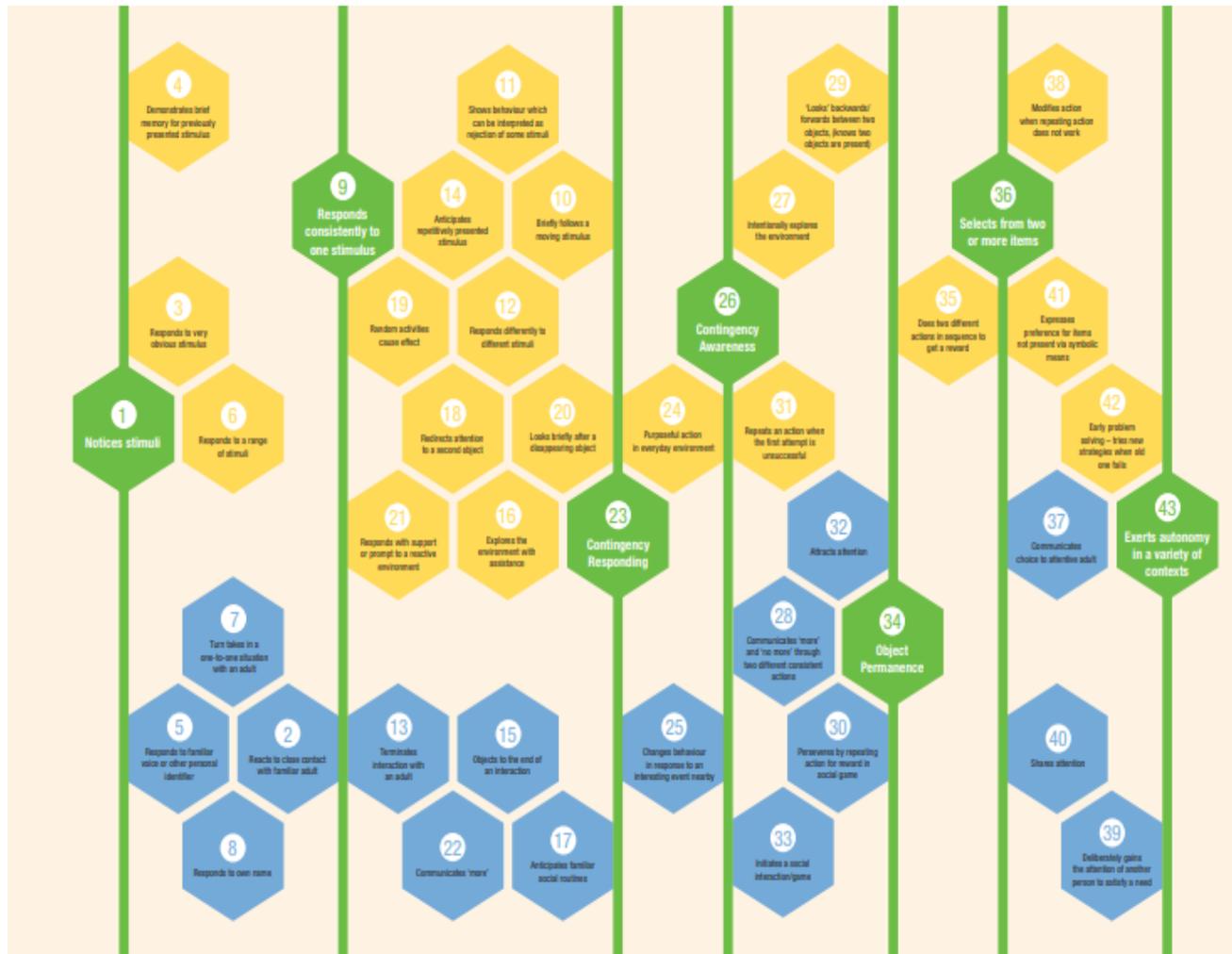
Figure 2. Quest for Learning Routemap

When discussing observing learners to assess particular milestones, the Quest for Learning guidance (CCEA, 2006, p 40.) notes:

"*Observing learners with PMLD to detect a response requires a high level of skill, honed by experience, to note small variations in performance. The concentration needed to do this is intense. It is difficult to maintain concentration over long periods. Knowing how to observe is, therefore, inextricably linked to knowing the learner. From your experience of the learner, you must be able to differentiate between:*

- *an intentional response;*
- *a reflexive response;*
- *seizure activity; and*
- *stereotyped movements.*

When you observe learners, you should:

- *clearly plan and structure your observations;*
- *make sense of learners' responses; and*
- *ensure all adults working with the learner contribute to the observation process.*

It is important to establish:

- *that a response is intentional and not reflexive, such as a startle;*
- *that a response is a direct result of the stimulus and is not a response to staff actions; and*
- *exactly what qualities of the stimulus lead the learner to respond.*

As an observer, you are often looking for extremely subtle nuances of response, such as:

- *a very small change in breathing pattern;*
- *fleeting eye movements or pupil dilation;*
- *'stilling' (a momentary 'freeze');*
- *tensing or relaxing;*
- *a change in facial expression;*
- *vocalisation; or*
- *a movement of mouth, hands or feet.*

This detail is of great importance to the current research, which aims to focus on the extent to which staff and researchers can identify the milestones set out in quest for learning in learners with PMLD."

A final note to highlight in relation to Quest for Learning is that it specifically states that:

"Quest is an assessment tool, and not the curriculum" (CCEA, 2006, p. 10). This is important as Martin (2006), when discussing P scales, commented on the danger of a blurring occurring between curriculum and assessment.

The Current Research

Formal research findings exploring Routes for Learning and Quest for Learning are relatively sparse. Atkinson & McDermott's (2016) article provides a summary of a doctoral piece of research focusing on routes for learning. It focused on implementation of routes for learning in two schools, and how the materials and guidance were used in practice. In the dissertation, McDermott cites the work of Van Walwyck, a speech and language therapist who began to explore the use of Routes in a School, highlighting advantages of Routes for Learning, which provided milestones that appear appropriate.

However, Van Walwyck also notes that Routes for Learning appears to overlooks the development in physical, visual, and tactile skills. Other commentary on Routes for Learning and Quest for Learning online is found mainly within Special School websites, and in publications such as PMLD Link.

An issue for both the Quest for Learning, and Routes for learning is the lack of research evidence on their validity and utility: there is little published evidence to demonstrate that these milestones can be used to explain the capacities of learners with PMLD in classrooms, and that these capacities and milestones can be easily identified by staff, and researchers. The aim of this research is to explore, within the confines of one school, and indeed one classroom, whether researchers and staff can use the quest for learning materials to come to a shared understanding of the abilities and needs of pupils within that classroom. Observational data will be collected through video recordings. The aim is to use these recordings to see if agreement can be established between professionals in the setting, and the researcher, on the level of functioning that the pupils are displaying.

Establishing whether there is common agreement about the Quest for Learning will serve a number of purposes:

1. Provide an opportunity for members of staff to collaborate and come to a consensus on the learning needs of pupils with PMLD
2. Provide a basis for making a decision about whether Quest for Learning is an appropriate tool for assessing and planning a curriculum for pupils with PMLD

These could lead to a lessening of social isolation for this group through understanding and being able to set out a proper plan of action for them, which addresses their needs.

Literature Review

This section will provide a broad overview of current issues being addressed by researchers in relation to PMLD. Sections will cover how the category of PMLD is defined, discussion around how learners with PMLD interact with, and are understood by others, and a brief discussion around curricula used to support the learning of this group.

Defining PMLD

It is common practice for research on learners with profound and multiple learning difficulties to start by defining this particular category of need. Ware (2005, see also Bellamy, Croot, Bush, Berry and Smith, 2010) highlights a lack of consensus over the terminology to be used, noting that while the term PMLD is in common usage in the UK, other terms, such as Profound Intellectual and Multiple Disability (PIMD), and Complex needs, are also used. Gittins and Rose (2007) provide a helpful summary of a variety of the ways that different researchers define this category. They cite for example the World Health Organisation, which notes in relation to profound mental retardation: "*The IQ in this category is estimated to be under 20, which means in practice that affected individuals are severely limited in their ability to understand or comply with requests or instructions. Most such individuals are immobile or severely restricted in mobility, incontinent, and capable at most of only very rudimentary forms of non-verbal communication. They possess little or no ability to care for their own basic needs, and require constant help and supervision*." World Health Organisation (1992) cited in (Gittins, 2007, p. 40).

A number of researchers (Ware, 1996, Hogg, 2004) state that learners with PMLD typically have learning difficulties so severe that they are typically functioning at a developmental level of less than 2 years of age. An important aspect that must be highlighted is that PMLD involves more than one disability (Dee, 2002, Lacey, 1998). Beyond the physical disabilities associated with this category of need, researchers have highlighted a variety of ways in which having Profound and Multiple Learning Difficulties can impact on different capacities. Hughes, Redley, and Ring (2011) for example focus on the fact that learners with PMLD can be characterised as being pre-intentional, with little or no ability to intentionally engage with the world. Similarly, Poppes, van der Putten, ten Brug, & Vlaskamp (2016) note that communication is a major difficulty for these learners, with many relying on nonsymbolic forms of communication. Other researchers (Bellamy, Croot, Bush, Berry and Smith, 2010, Samuel & Pritchard, 2001) highlight the delays in social development experienced by these learners. Poppes et al (2016) highlight the sensory difficulties which are common to this group of learners, while Rees (2017) highlights the health and mobility needs of this group of learners, with Hogg (2004) identifying epilepsy, and respiratory problems in particular as having a high probability of occurring for this group. Zaal-Schuller et al (2016, p. 284) state that in addition to this, many learners with PMLD have *"life-limiting conditions that are characterized by prognostic uncertainty".* Finally, Ockelford, Welch and

ZImmermann et al (2002, see also Vorhaus, 2017) that delays in development for these learners impact cognitive, sensory, physical, social, and emotional development.

It is also relatively common to hear the needs of this group of learners be described as "complex" (e.g. Zaal-Schuller et al, 2016, Department for Education and Skills, 2003). Indeed, one aspect identified by the Welsh Assembly Government (2006) is that they have "complex health care needs/dependence on technology" (p. 51). Their needs are often very diverse (Simmons and Bayliss, 2007), with Rees (2017) in particular noting that PMLD is a very heterogeneous category or grouping. The population of learners with PMLD tend to display very spikey cognitive profiles, as the abilities of these learners are varied, and do not necessarily follow any recognised linear developmental pathway. Given this, it is not surprising that the value of the term PMLD has been subject to criticism (Vorhaus, 2017) with Goldbart, Chadwick, and Buell (2014) noting that PMLD *"is a description rather than a diagnostic categor*y" (p. 68.). A final key critique of these definitions, raised by Simmons and Watson (2014) is that they focus entirely on deficits, rather than looking at the capacities of these learners.

This discussion around how to describe and define the needs of this group of learners serves to highlight the complex and multiple issues that researchers and practitioners must address in order to understand and support this group of learners, and to perhaps pre-empt some of the difficulties faced by educators when trying to understand and support the learning of these individuals.

Understanding and Interacting with Learners with PMLD

Having discussed the difficulties in trying to identify and characterise this group of learners, this section will focus on the extent to which researchers and practitioners understand and can interact with these learners. An important starting point here is to highlight an observation made by other researchers, namely that learners with PMLD are one of the most excluded groups in society (McClimens, Bosworth, Brewster, and Nutting, 2012), whose informal social network it appears consists mainly of family members (Kamstra, van der Putten, & Vlaskamp, 2015). On a possibly related point, Ware (1996, p. 7) states that *"Research evidence backs the view that people with PMLDs do have some characteristics which make interacting with them more difficult and potentially less satisfying for the other person*". Issues in relation to understanding and interacting with this group in all likelihood contribute to this.

Learners with Profound and Multiple Learning Difficulties typically have limited communicative abilities. Porter, Ouvry, Morgan & Downs (2001) note that these learners have little access to spoken language, while Nijs, Vlaskamp, & Maes (2015) highlight difficulties in relation to symbolic communication. They highlight that communication, which is at a presymbolic or protosymbolic level, creates a barrier to others accessing and understanding them. Jones, Pring, & Grove (2002) similarly note that intentional

communication develops slowly for this group of learners. This can leave a relatively limited range of ways for these learners to communicate – through body movement (which can be very limited depending on their level of physical impairment), through vocalisations, (Hostyn & Maes, 2009), as well as through facial expression and eye gaze (Francis, 2011). These forms of communication are termed idiosyncratic (Porter, Ouvry, Morgan, & Downs, 2001), unique to individuals, and likely to vary greatly across a population of learners. This can leave limited or ambiguous channels for learners with PMLD to convey messages to people in the environment (Griffiths and Smith, 2016). This may mean that whatever these learners try to communicate may very well be misinterpreted or missed.

Being able to communicate is identified as a key tool to support individual development and Social Development (Rayner, Bradley, Johnson, Mrozik, Appiah, & Nagra, 2016). Can these learners make themselves understood? Green and Reid (1999) provide an example of how the behaviour of these learners is explored using an "index of happiness", as a broad means to measure quality of life in this group of learners. Simmons and Watson (2015) describe happiness in this instance as facial expressions or vocalisations that would typically be considered to communicate happiness in learners without disability (e.g. smiling, laughing). Simmons and Watson describe how a range of research suing indices of happiness show increased indications of happiness (or declines in unhappiness) when preferred stimuli are presented. This provides evidence of these learners being able to communicate a preference. However, Jones, Pring and Grove (2002) highlight that the progress towards intentional communication is very slow in learners with PMLD.   A Mencap report (1999, p. 7) reports that

"Parents often understand their sons and daughters intuitively but find it difficult to put their instincts into words. To the outsider little is evident, but often a parent will say, 'She's really enjoying that' when apparently nothing is happening. An eye flicker or a twitch of the mouth can actually be rich in communication."

Similarly, Nijs, Vlaskamp and Maes (2016) provide a positive report on the nature of interaction between learners with PIMD and siblings, with Nijs et al noting that interactions with siblings are in all likelihood *"motivating and encouraging"* (p. 28) .

 Unfortunately, despite these positive findings, research also covers a range of negative findings, many of which focus on staff in schools. Porter et al (2001) note that staff can find it difficult to comprehend the communication of learners with PMLD, and the resulting difficulties in sustaining interaction can lead to staff giving up. Munde and Vlaskamp's (2015) findings indicate that support staff working with this group of learners may react too quickly when trying to interact with this group, rather than giving learners sufficient time to react to an activity/behaviour.   In Simmons and Bayliss' (2007) work, they report that staff would like to understand the learners with PMLD that they are supporting. Sadly however they cite a lack of time and training to support their development in this area. Aird (2000) makes a similar point about the lack of training for Learning Support Assistants supporting this group of learners in special schools. Given that their role in supporting learners with PMLD is crucial (Lacey, 2001), this is a major issue. To further highlight a potential lack of understanding of these students, a

study focusing on perceptions of challenging behaviour of learners with PIMD (Poppes, van der Putten, ten Brug, & Vlaskamp, 2016), which as they note is relatively high (Poppes et al, 2010), highlighted that the most common attribution (out of a range of options) to explain challenging behaviour is a biomedical one – e.g. it is the condition that is the cause, with environmental factors playing presumably little or no role. Poppes, van der Putten, ten Brug, & Vlaskamp (2016) cite further worrying findings from their own previous research that notes that challenging behaviour is seen as having "minor consequences" for these individuals. This is potentially worrying , as it is noted that challenging behaviour can severely impede developing relationships, and may contribute to Ware's previously cited finding that this group are not necessarily a very rewarding group to work with. Aird (2000) reinforces this point as he notes that in reality there are many potential causes for challenging behaviour, including an inability to communicate. They reinforce the point, quoting Nind and Hewett (1998, p. 5):

"The lack of encouraging feedback can also be a problem for both caregivers and practitioners. This can lead us to behave differently, to work harder perhaps, but also to feel more coldly towards the client and to be less tolerant of their other behaviours.""

Atkinson, Dunsmuir, Lang, and Wright (2015) reinforce this point somewhat, citing Harding's (2009) comments on the issues for educational psychologists to engage with and access the views of young people with PMLD and SPLD (Severe and Profound Learning Difficulties).

On the other hand, researchers have begun to produce evidence in relation to research capturing the "voice" of learners with a wide range of needs, including those with PMLD (Hill, Croydon, Greathead, Kenny, Yates, & Pellicano, 2016, Jones, Pring and Grove, 2002). Similarly, there is some positive work setting out guidelines to support interaction (Hostyn and Maes, 2009), which focus on factors such as sensitive responsiveness, joint attention, co-regulation, and an emotional component, which can support successful interaction. Hostyn & Maes (2009), in reviewing the small body of literature focusing on interaction between people with PIMD and their partners, described four components important in interactions: sensitive responsiveness, joint attention, co-regulation and an emotional component.

Simmons and Watson (2015) have helped to widen the debate around the awareness of others in learners with PMLD. They discuss "intersubjectivity", which captures broadly the developing awareness that these learners have of other people as subjective beings, and how this can be seen during interactions. Brigg, Schuitema and Vorhaus (2016) also look at the ability of learners with PMLD to experience and share enjoyment through humour as evidence of the ability of these learners to express themselves, and to be seen as *"fellow human beings"* (p. 1175).

Vorhaus (2017, p. 65) highlights the complexities in trying to understand what these learners may be capable, stating

"One and the same pupil may be capable of subtle reciprocity in personal relations whilst not able to utter a single word; or she is able to notice and laugh at the incongruity evident in using a large broom as a paint brush, but cannot be left alone for a moment."

This is a powerful quote, highlighting the capacities that these learners have, which for one reason or another, may not always be appreciated.

Curriculum

How staff interact with learners is impacted by the curriculum which they must follow. Issues around the curriculum, and in particular the use of p-scales have already been discussed in the introduction. However, a few more general points that require consideration from the literature must be covered here. First, Maes (2010) highlights the narrow range of activities that learners with PMLD experience: in the UK it is entirely possible that the use of p-scales (critiqued already in the introduction) contributes to this. McNicholas (2000, p. 151) reported a great deal of variety of practice in curriculum being used by teachers of learners with PMLD, and in particular highlighted a *"need to balance the developmental and therapeutic curricula with the national curriculum"*.
Dowrick (2002, p. 189), writing from an Australian perspective questioned whether the then current curriculum (which she compares to the situation in the UK) prepares learners with PMLD *"for the demands of adult life"*. These again call into question the use of an academically aligned curriculum for this group of learners, and highlights that a model such as Quest for Learning, which covers more practical, lifeskill oriented capacities, may be more useful for learners with PMLD.

Summary

This review of the literature highlights a number of key tensions. A contrast can be seen between research which attempts to identify and highlight at a fine-grained level of analysis the developing capacities of the learners, with research that highlights the deficits and limited capacities of these learners. Staff access to information, training, and an appropriate curriculum to address the needs of these learners is also identified.

Methodology

This research aimed to assess the Quest for Learning Assessment framework; to see if it could be used to gauge the functional level of learners with PMLD. The research sits within a positivist paradigm, which believes that "all genuine knowledge is based on sensory experience and can only be advanced by means of observation and experiment" (Cohen, Manion & Morrison, 2018 p. 10). This research aims to explore the validity of the milestones, by analysing the extent to which they match the behaviours and abilities demonstrated by a range of learners with PMLD in a typical special school classroom, with a specific focus on its content validity (Cohen, Manion and Morrison, 2018). It also aims to explore the reliability of the milestones – can different individuals, with different levels of knowledge and familiarity with learners independently match behaviours to the same milestone(s)?

Participants

The research was conducted in a single classroom of a special school and college (covering ages 2-19) for learners with a range of needs, covering Severe Learning Difficulties, Autistic Spectrum Conditions, and Profound and Multiple Learning Difficulties. This classroom was part of the primary phase of the school, and included seven students, five of which were included in the research, following engagement with staff and parents to provide ethical clearance. A detailed individual description of these learners is provided in the results. The classroom included a range of resources including switches and toys, ball pool, and sensory devices (including soundbeam, eye gaze detection equipment/software). The research took place across a calendar year, from April 2016 to approximately March 2017. The class was led by a class teacher, a Senior Learning Support Assistant, and a number of Learning Support Assistants, to ensure that a 1:1 staff: pupil ratio was maintained. As the research covered more than one school year, there were changes in staffing from the start to the end, with a different class-teacher leading the class in the 2016-17 school year.

Observation

This research involved formal structured observation. Cohen, Manion, and Morrison (2018) note that observations are a powerful and direct way of collecting data in natural social situations. In particular, it allows one to focus on everyday behaviour that might otherwise go unnoticed or be taken for granted. Supported by the use of a video recorder, this allowed researchers to independently view and review recorded material to assess whether milestones are being demonstrated by learners. Structured Observation requires a well-designed coding scheme, with discrete, non-overlapping categories (Cohen, Manion & Morrison, 2018).

A video camera and tripod was procured in order to allow for the regular recording of lessons and activities in the classroom. Staff, including a Senior Learning Support Assistant with special responsibility for this research project, were encouraged to plan and regularly record activities for all the learners for whom consent was provided. Staff were provided with broad guidance to capture as broad a range of formal and informal activities as possible, bearing in mind the cognitive and social milestones covered by Quest for Learning. The activities that were recorded can be broadly considered to be typical of the type of activities that these learners experience in the school, though for practical purposes, it was decided that activities in the swimming pool of the school would not be recorded. No specific guidance was provided in relation to the required duration of recorded observations, though it was expected that individual videos should be relatively long (5-15) minutes, bearing in mind the amount of time it may take learners with PMLD to respond and interact with individuals and the environment.

Staff planned when to record observations in line with the class schedule, capturing different activities for each learner, on a range of days, and at different times of day, to provide as broad a variety as possible of observational data for each learner (see table 2 for examples of activities.

Communication sessions – communication books turned into play to gain the best responses.
Child-led activities – playing and asking for more rotations on a spinning chair.
Play using interactive toys
Sensory stories: e.g. caterpillar – responses to puppets, animation in story delivery and a range of objects
Soundbeam: exploration of cause and effect with regard to movement of the body

Table 2. Sample Activities recorded

Analysis

The video recordings were regularly transferred from the Camera to a secure computer, and labelled (assigning labelled information about the Learner, and a code to distinguish videos). At the end of the data collection, a total of 541 videos were recorded across all participants. There was a clear variation in the number of total videos recorded per learner, based in large part on their availability. On closer inspection, a number of videos were deemed too short to be usable – either because they were accidental recordings, because files had accidentally been duplicated, or because they were recordings that ended quickly, due to the staff making a judgement that recording wasn't feasible.

By looking at video length, the researcher was able to use an arbitrary measure of video length being over a minute (to provide an acceptable amount of time for learners to engage with and respond to the environment) to select a roughly equivalent number of videos per learner to code (see table 3).

Participant	Total Videos	Videos less than a minute	Total codable videos
Student A	133	91	42
Student B	95	55	40
Student C	106	66	40
Student D	93	53	40
Student E	114	72	42

Table 3. Number of Video Observations Recorded per student

The researcher coded every video longer in duration then a minute for each learner. The second coder (a member of staff) independently coded a subset of 10 videos for each learner. The videos were organised by length for the second coder, meaning that they coded the 10 longest videos for each learner.

A coding scheme was devised for the detailed analysis of these recordings. The first step in this process involved the use of Quest for Learning to provide the labels and brief descriptions of what to look for in relation to each Milestone (see appendix 1). These were set out in a detailed table for reference when coding. A second decision involved the extent to which a milestone has been demonstrated, in line with the commentary from the Quest for Learning materials in relation to the skills required to identify the behaviours of learners. Three codes were selected:

1. Demonstrated – When the learner is deemed to have shown behaviour judged as unambiguously matching a specific milestone
2. Partially Demonstrated – Where there is ambiguity about whether the milestone is demonstrated: often this was coded when the staff in the recordings acted in a way to suggest that there was evidence that a learner was demonstrating a behaviour that was not as clearly demonstrated in the view of the coder.
3. Not Demonstrated – This code applies to situations where there is a clear opportunity to demonstrate a milestone, but it was not demonstrated. This code was used in a majority of cases for milestones that require specific scenarios, such as object permanence.

The longer videos, with durations of up to 15 minutes, captured a large range of potential milestones. Even in shorter videos, learners had the potential to engage in a range of potential social/communicative milestones. In order to manage the burden on coders, a decision was taken to limit the recording of milestones per recording to 5: this cut down the need to review each video on multiple occasions, although in practice for both coders videos were generally watched more than once and/or rewound to check for evidence of milestones being met. Where learners were judged to demonstrate more than 5 milestones, a decision was taken to focus on the highest numbered milestones: a justification for this was the high incidence of the very earliest milestone across all

learners and videos. Where learners did demonstrate over 5 milestones in a single video, the milestones discounted were regularly the very earliest milestones.

Ethics

When collecting data with vulnerable groups, as learners with Profound and Multiple Learning Difficulties are generally classified, a number of precautions need to be taken to ensure that the research is conducted in an ethical and transparent manner (BERA, 2018). The use of video recordings, which is considered intrusive in relation to anonymity also required careful consideration. The researcher and staff (particularly the head teacher) had a number of discussions before selecting the students who would be part of this research, to ensure that their participation was, in their judgement, in the students' best interests. Parents were provided with detailed informed consent letters, informing them of their rights and the rights of the student in relation to participation. While video recordings/photos are not uncommon as a means of collecting general assessment data in the context of special schools, it was made very clear in the consent letter to parents that these videos would not be used or accessible outside the parameters of the research. Members of staff were also consulted extensively, and ensured that the video data was being used solely to look at the developmental milestones of the learner. Staff also discussed with the researcher the sensitivities around making recordings, and were given freedom of judgement in relation to when to record and not record individual learners, if they judged that the recordings would be detrimental to the learner, or that they were demonstrating behaviour that could be deemed a withdrawal of consent.

The data collected was kept securely at all times. When not in use, the video camera was kept in a secure, locked cabinet. Data from the camera was regularly transferred from the camera to a password protected computer/online drive, and then deleted from the camera. The videos were only accessible to the researchers, and no permissions was granted for their use outside of the current research. Upon completion of this research, video files will be deleted. Anonymity of participants is guaranteed through the use of pseudonyms, and the removal of potentially identifying information in publications.

Results

The results section will first explore the extent to which the full range of milestones identified by Quest for Learning were observed across participants. This will be followed by an exploration of the Quest Milestones of individual learners. The final section will focus on the degree of agreement between two researchers, one independent, one a member of staff, in relation to their coding of milestones of quest for learning.

Milestones Observed

Quest for Learning includes a set of 43 milestones. These are very broadly split into 3 areas: early cognitive development, social interaction, and communication. Figure 3 shows the range of different milestones observed, and the number of times they were observed across all observations for all learners. Figure 3 provides evidence that learners observed demonstrated a broad range of milestones during recorded observations. This demonstrates that the milestones may form a basis for helping to identify and understand the developing capabilities of this group of learners. Given that for each video, observers coded up to 5 milestones, it is perhaps not surprising that the early milestones, particularly "responds to very obvious stimulus" were observed most frequently, as they could be coded in almost any given situation. In total, 28 out of 43 milestones were observed, with only 2 of these milestones ("responds to own name" and "anticipates repetitively presented stimulus") only observed once. This provides good evidence that these learners are actively engaged with their environment, and demonstrating key behaviours and competences, which can be built on. These milestones capture abilities that these learners can and do demonstrate.
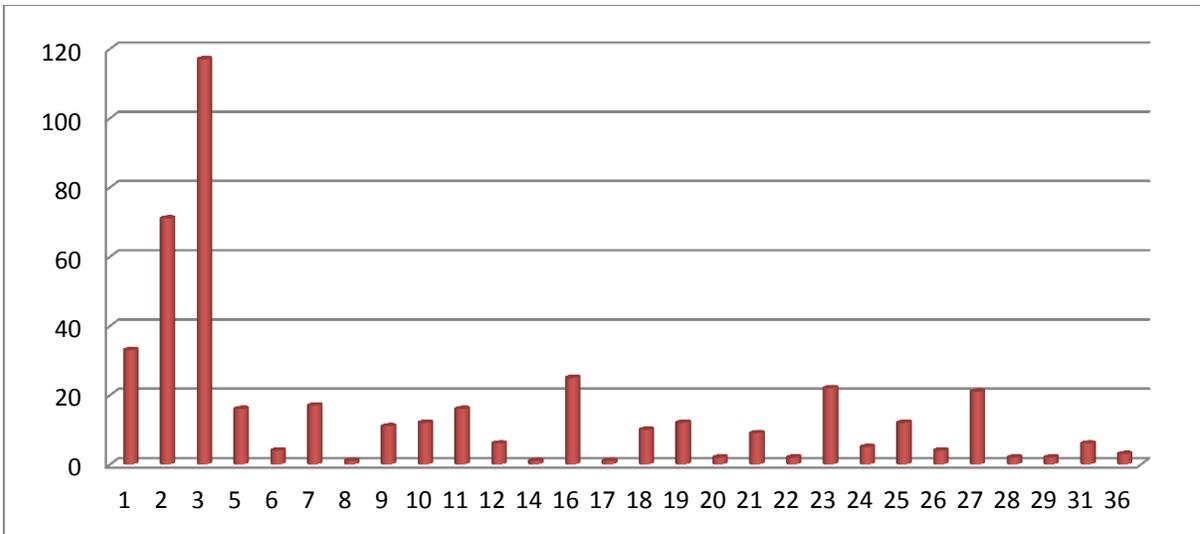
Figure 3. Developmental Milestones Demonstrated

Looking further into the different types of milestones identified within Quest for Learning, figure 4 shows the incidence of milestones identified as early cognitive developmental milestones demonstrated by learners. A range of these milestones were observed. To anticipate a limitation touched on later in this report, it must be noted that some of the milestones towards the end of the list, such as 42 "early problem solving – tries new strategies when old one fails" and 43 "exerts autonomy in a variety of contexts" are not readily observable/codable within the context of observations of single videos. One would expect milestone 43 to be demonstrated based on observations across a range of activities, which was beyond the scope of this piece of research.
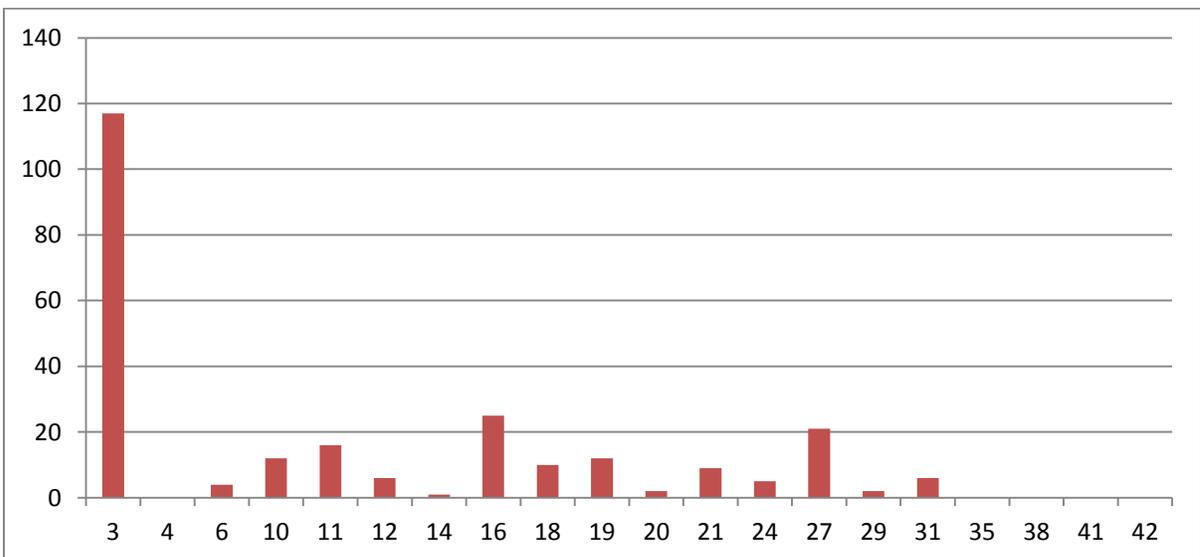

Figure 4 Early Cognitive Development Milestones Demonstrated

Figure 5 highlights the frequency of demonstration of "key milestones", again highlighting that these learners have developed what can be considered essential abilities, which can be used by educators as foundations for developing IEP targets and lessons. Contingency responding is an interesting milestone in this respect, as it leads onto milestones like 26 Contingency Awareness.
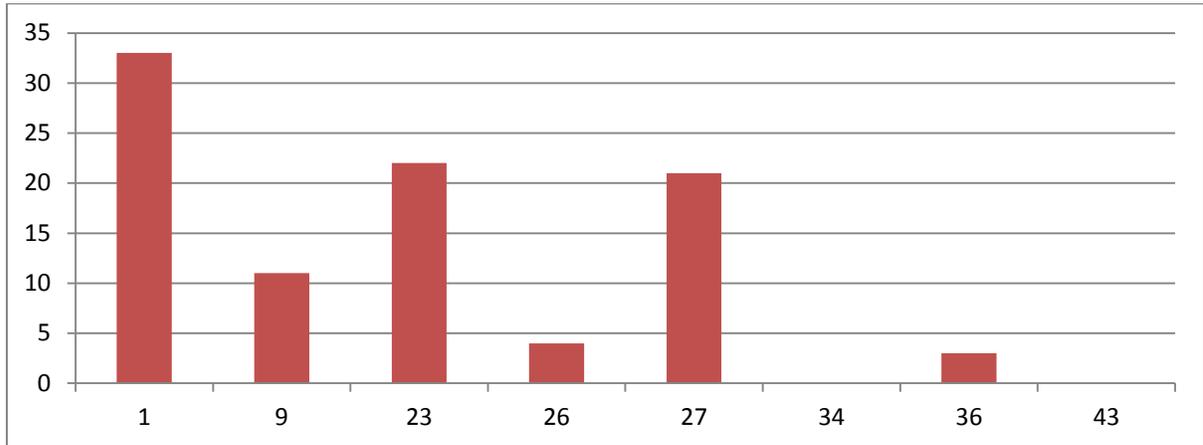

Figure 5. "Key Milestones" Demonstrated

On a less positive note, figure 6 shows the range of milestones identified as being related to social interaction. There is relatively little evidence of social interaction milestones beyond the very early ones. This of course may reflect the nature of the video observations, which by and large focused on specific activities, rather than instances where learners were free to focus on engaging in general social interaction with peers or adults. This potentially provides evidence that providing these learners with opportunities to develop their social interaction skills is key development area for Staff Continuous Professional Development.
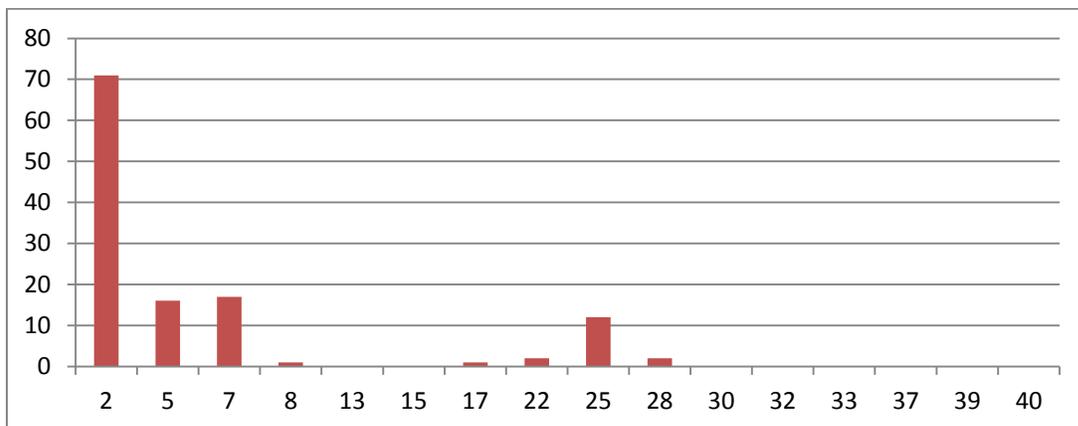

Figure 6. Social Interaction Milestones Demonstrated

Moving back to the milestones as a whole, table 4 sets out the milestones that were not observed at all across any of the learners. Milestone 4 stands out as being the lowest milestone not demonstrated; this may be due to the fact that opportunities for this to be demonstrated were not captured within the videos. By and large, the milestones not demonstrated were towards the bottom of the list. Some of these, as noted already, are not readily observable within the context of a single video. For other milestones, such as 32 "attracts attention"; it is possible that these were not observed because the learners did not have the opportunity to demonstrate them. Milestone 33, initiates a social interaction/game would be unlikely to arise, given that a majority of the recordings involved staff initiated interactions and activities. Therefore, the lack of observation of these types of milestones does not necessarily mean that the learners are not capable of demonstrating them. While it is important for staff to interact with these learners, this data may also indicate that these learners could benefit from opportunities to be active agents, instigating or being given the potential to choose for themselves, as circumstances allow.

Table 4. Quest for Learning Milestones not observed during observations

Milestone Number	Milestone
4	demonstrates brief memory for previously presented stimulus
13	Terminates interaction with an adult
15	Objects to the end of an interaction
30	Perseveres by repeating action for reward in social game
32	Attracts attention
33	Initiates a social interaction/game
34	Object permanence
35	Does two different actions in sequence to get a reward
37	Communicates choice to attentive adults
38	Modifies action when repeating action does not work
39	Deliberately gains the attention of another person to satisfy a need
40	Shares attention
41	Expresses preference for items not present via symbolic means
42	Early problem solving – tries new strategies when old one fails
43	Exerts autonomy in a variety of contexts

Milestones Demonstrated, partially demonstrated, and not demonstrated

In this section, the focus will be on the extent to which milestones were observed. Figure 7 shows the instances of milestones deemed "partially observed". This is meant to denote instances where adults recorded in the video acted on the assumption that learners had demonstrated a particular behaviour/milestone, that was not clearly apparent to the independent observer when coding the video. The large number of instances of milestone 16 "explore the environment with assistance" is striking – these instances were largely deemed partially demonstrated as it was difficult to distinguish whether these activities were truly child led. Staff in the classroom may also be more attuned to the idiosyncratic behaviours of learners, and the way they may "respond to very obvious stimulus" (milestone number 3), more so than an independent observer.
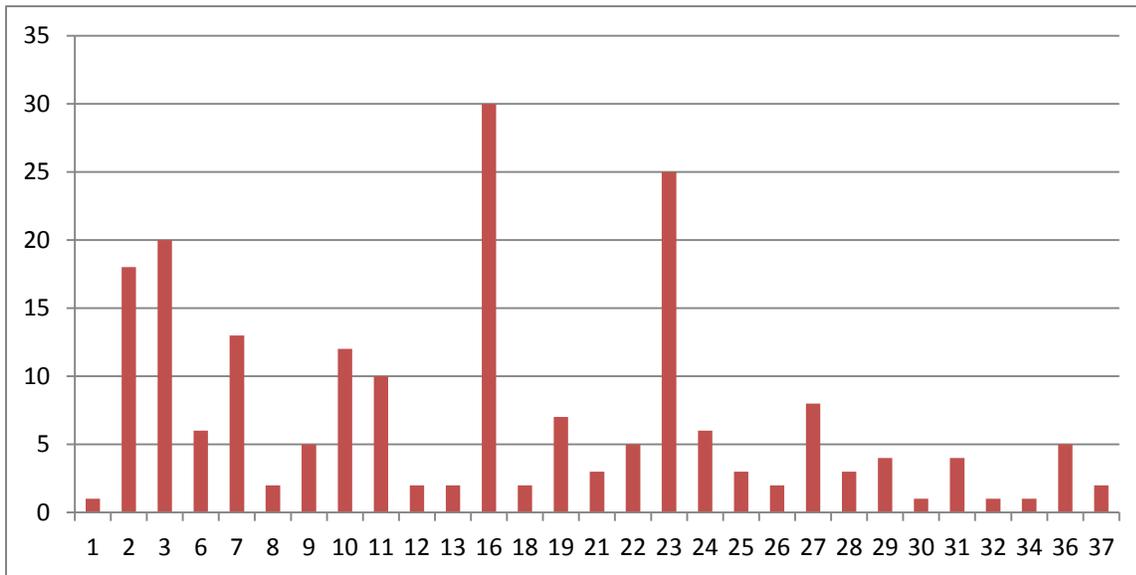

Figure 7. Number of Times Quest for Learning Milestones were judged partially demonstrated

Figure 8 shows instances where the observer watching videos saw that there was an opportunity for learners to demonstrate specific milestones due to the activities and resources in place during the recording. In these instances, learners were coded by the observer as not having demonstrated the milestones in question. This could be due to a number of reasons, for example lack of time within relatively short recordings to respond to the activity/environment, or lack of interest in the particular stimulus.
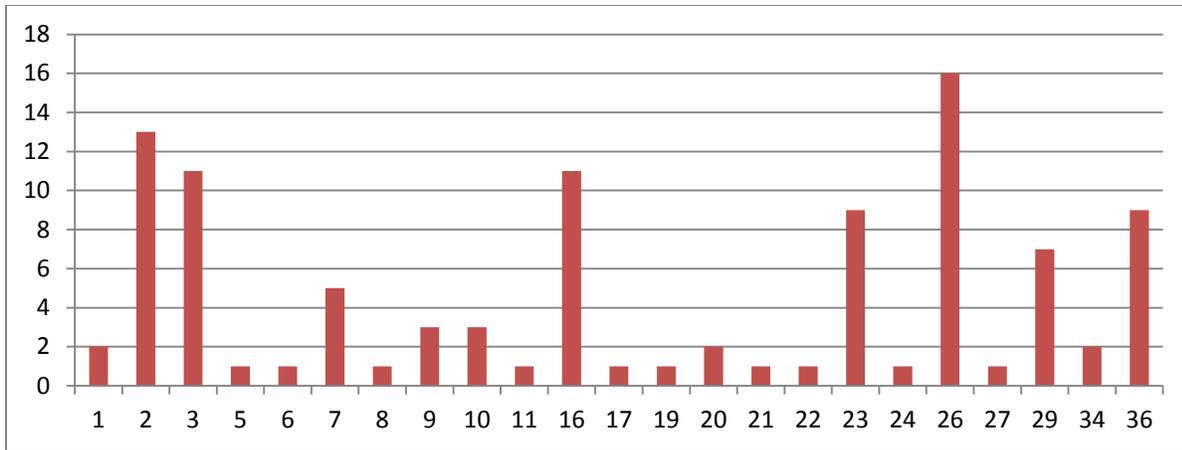
Figure 8. Number of Times Quest for Learning Milestones were judged not demonstrated

Individual Learner profiles

Student A's gross and fine motor movements, while better than some of his classmates', are affected by his somewhat floppy tone. Student A suffers from Epileptic seizures (which can require rescue medication). Staff report that he likes being able to explore objects (particularly with his mouth) and his environment (through commando crawling). From the video recordings, it is evident that his overwhelming urge to pull at/mouth/drop objects can sometimes get in the way of the object of the lesson. He wears glasses, though sometimes he does cast these off. Student A demonstrates a broad range of Quest for Learning's developmental Milestones (see figure 9), particularly milestone 3 (responds to very obvious stimulus). Student A engages with the environment and appears to demonstrate curiosity in his surroundings, other staff, and fellow students. Incidence of milestones 2 (reacts to close contact with familiar adult) and milestone 5 (responds to familiar voice or other personal identifier) attest to this. A number of sessions where Student A is encouraged to walk in a supporting walker further demonstrate that there are opportunities to develop, both in terms of social interaction, and engagement with the environment.
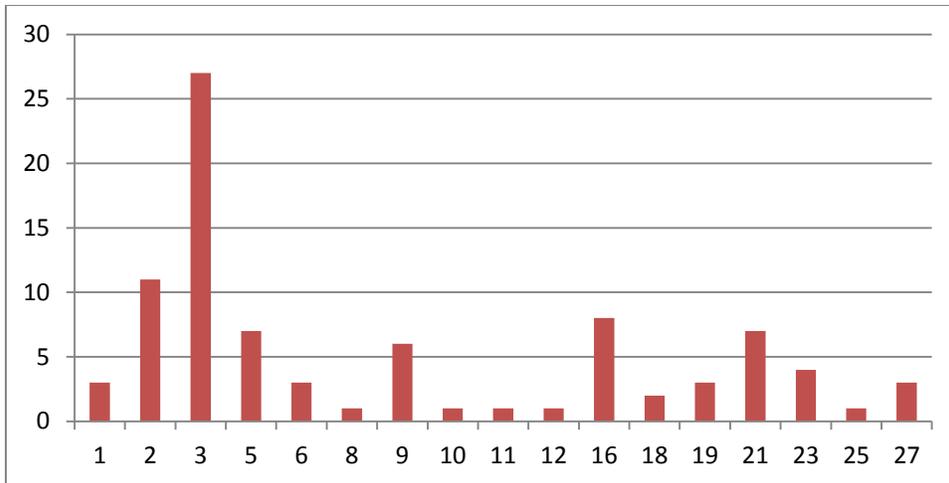
Figure 9. Developmental Milestones Demonstrated by Student A

Student B has severe scoliosis for which requires them to use a spinal brace 24hrs a day. Control of gross motor movements is limited. Muscle tone is quite often defined by too much or too little tension (predominantly the former) – limbs are stiff and staff report that she is not keen on manual handling unless reassured – she is more likely to cooperate with aided movement (hand-under-hand etc.). Her sight is greatly impaired: she is registered blind (severe CVI), though she sometimes appears to register bright lights, but little else. Chronologically, Student B is the youngest student in the study. Developmentally, she is considered by staff to be the youngest in the study too – her ability to lead in exploration etc. is limited by both her impaired vision and physical capabilities. Staff report that she is happiest when interacting with a familiar adult and taking part in an activity that motivates her – soundbeam/music and switch-activated hairdryer.

Given her sensory and physical status, it is perhaps not surprising that this student shows a much smaller range of developmental milestones (figure 10). She shows a very spiky profile, with milestones from different areas; though a large number of milestones demonstrated include the first three milestones. A range of other milestones are demonstrated, up to milestone 31 (repeats an action when the first attempt is unsuccessful). It is likely that the nature of her physical and sensory needs limits her ability to demonstrate milestones, both in general, and in the context of the video observations undertaken in this research. However, this data does provide evidence of developing capacities for this learner.
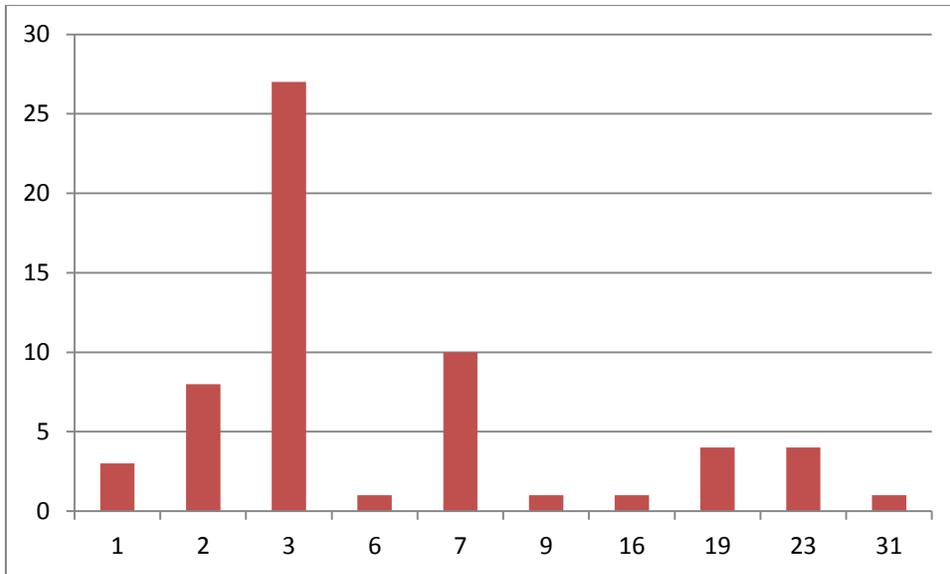
Figure 10. Developmental Milestones Demonstrated by Student B

Student C has a formal diagnosis of autism, and is nonverbal. No physical or sensory issues are identified for this learner, though staff note that, as with many students on the autistic spectrum, he will seek a lot of sensory experiences (i.e. a need for squashes and hugs from liked adults, stimming). He is noted as being capable of expressing like and dislike for activities. Student C demonstrates a very broad range of developmental milestones (figure 11), with incidences of milestone 27 (intentionally explores the environment) likely reflecting the physical capacities of this learner. The demonstration of the ability to communicate more and no more through two different consistent actions (milestone 28) attest to his communicative capacity. Demonstration of milestone 11 (shows behaviour that can be interpreted as rejection of stimuli) attest both developed preferences and an ability to communicate which could be developed further. His ability to choose between 2 items (milestone 36) is also notable.
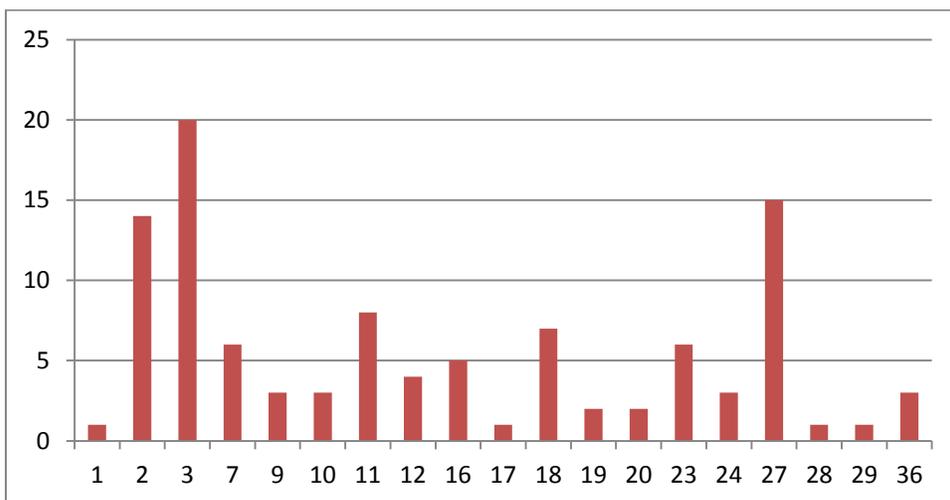

Figure 11. Developmental Milestones Demonstrated by Student C

Student D has a complex range of needs; he uses a wheelchair, needs corrective glasses, and has limited gross and fine motor control in his arms/hands. Strength and control can often lead to long delays in physically responding to stimuli. Staff reported that video data was likely affected by the fact that the majority were filmed during a period of remission from an extremely serious seizure. This seizure left him with severe neurological pain – took a few months to pinpoint that this was the problem and effectively treat it – and as such, he was often either in pain or exhausted following a period of screaming and crying out. Nevertheless, this student demonstrated a range of milestones (see figure 12), and a spikey profile. His contingency responding (milestone 23) is notable, as is his demonstration of following a moving stimuli (milestone 10), given his level of eyesight. In some videos he was observed to be very active and responsive to the environment and to staff; in others less so.
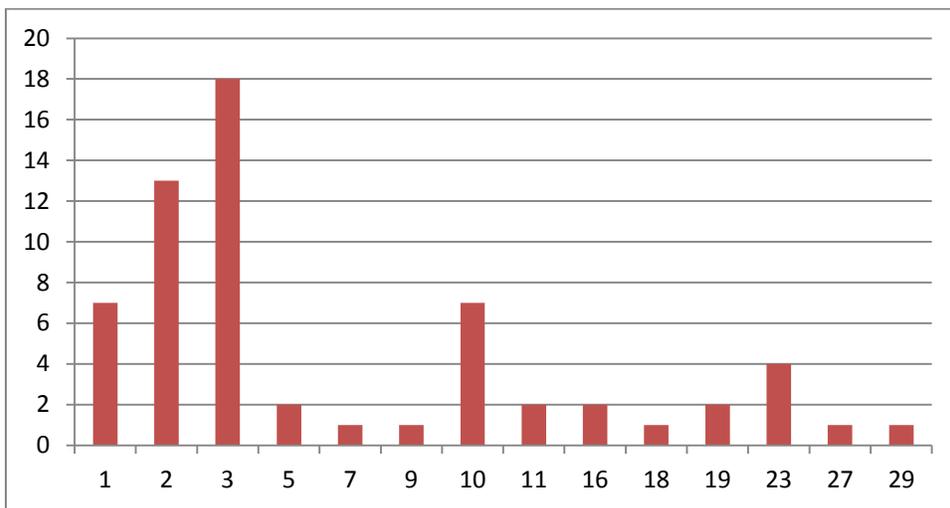
Figure 12. Developmental Milestones Demonstrated by Student D

Student E is limited by her quadriplegic cerebral palsy. She is registered as Blind, though does demonstrate some instances of sight. In spite of her limited physical capacities, she again demonstrated a broad, spiky range of the developmental milestones in Quest for Learning (see figure 13). She was able to demonstrate preferences (milestone 11: shows behaviour which can be interpreted as rejection of stimuli), shows interest in exploring the environment (milestone 16), and perhaps most strikingly demonstrated changes in behaviour in response to an interesting event nearby (milestone 25): there were a number of occasions where Student E clearly focused on activities being undertaken by other learners and staff in the classroom, demonstrating awareness and engagement with the environment. The videos demonstrate a happy and engaged learner, who enjoys company and laughter.
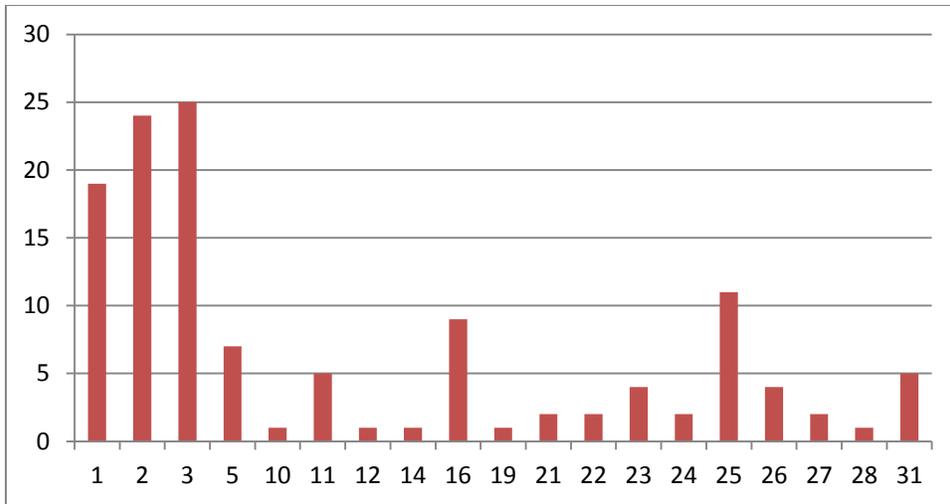
Figure 13. Developmental Milestones Demonstrated by Student E

Table 5 demonstrates the number of developmental milestones demonstrated by each student. It is arguable that the least number of milestones was demonstrated by the learner with the most severe physical issues. However, by and large, physical capacity did not inhibit students from demonstrating a range of behaviours and interactions that could be observed as evidence for a developmental milestone. Figures 9-13 demonstrate that all students demonstrated the first 3 developmental milestones. Outside of this, students are clearly very variable in terms of demonstrated capacity. This reflects the variety of learners that can be covered by the label PMLD.

Table 5. Number of Milestones Demonstrated by each student

Student	Number of Milestones
A	17
B	10
C	19
D	14
E	19

Inter-rater agreement

This final section focuses on the extent to which two researchers, one a member of staff who regularly worked with this group of learners, and an independent researcher, could identify common developmental milestones.

As noted in the methodology, the member of staff independently coded a subset of 10 video observations for each student. The member of staff coded up to 5 milestones per observation, using the same approach and format as the independent researcher. The second coder also coded whether these

milestones were demonstrated, partially demonstrated, or not demonstrated. No disagreements were noted between the 2 coders in relation to demonstration/partial demonstration /nondemonstration. This provides confidence that the milestones identified as being demonstrated by members of staff could be independently verified by a researcher who, although broadly familiar with the capacities of learners with PMLD, does not have any specific knowledge or experience of working with thestudents.

Table 6 below sets out the extent of agreement between 2 observers in relation to milestones observed. For a majority of videos, the same number of milestones were identified by both coders. Where there were discrepancies, they tended to involve lower milestones recorded by one observer but not the other. Disagreements did not throw up any significant milestones observed only by the second coder that were not otherwise observed in other videos. The level of agreement was consistent across all learners: in spite of the variability in terms of milestones demonstrated across students, the 2 coders were consistent in common identification of milestones demonstrated.

Table 6. Inter-rater reliability

Student	Proportion of Agreement	Percentage Agreement
Student A	45/48	93.75%
Student B	41/45	91.11%
Student C	43/45	95.55%
Student D	40/42	95.23%
Student E	45/50	90%
Overall	214/228	93.85%

Discussion

Using Quest for Learning materials to understand learners with PMLD

This research provides important evidence in relation to the extent to which Quest for Learning materials are useful in the classroom. The findings from this piece of work provide evidence that schools in England, moving away from the statutory use and reporting of student progress via P-Scales, could find the Quest for Learning Materials helpful. Indeed, it would be a relatively easy task to map the *" the 7 areas of engagement (responsiveness, curiosity, discovery, anticipation, persistence, initiation and investigation)."* (Rochford, 2016, p. 6) onto the milestones set out in quest for learning. The set of 43 milestones can be used to identify progress in a much more fine-grained manner (Martin 2006) than P-Scales levels. The research identified that the range of milestones set out in Quest for Learning could be identified across all learners, with the individual learner profiles demonstrating the variety and spikiness cited by other researchers(e.g. Simmons and Bayliss 2007, Rees, 2017). These provided a real, in-depth overview of the capacities of the learners – highlighting gaps, but also abilities. It was common across all learners to demonstrate "gaps", with students demonstrating what could be considered more advanced milestones, even though there is no evidence that they have demonstrated what are considered earlier, simpler milestones and capacities. The individual learner profiles showed that the Quest for Learning Materials can be used to explore the capacities of this diverse group, with the learners taking part in this research being quite varied in terms of their physical, social and cognitive development. The quest for learning materials can provide a non-linear pathway that can provide staff with guidance on what targets each of these learners could potentially be in line to develop and demonstrate, given their current capacities.

Previous research has highlighted the limited capacity these learners can have in communication (Porter, Ouvry, Morgan and Downs, 2001, Nijs, Vlaskamp, & Maes, 2015). Figure 6 shows the extent to which learners demonstrated social communication milestones, while not as impressive as the data for key milestones and cognitive developmental milestones (figures 4 and 5), they do nonetheless demonstrate the emerging communicative and social development of these learners, and may provide a helpful frame of reference for supporting these learners.

While not easily codable against the milestones of Quest for Learning, the videos recorded did provide some evidence of the type of "intersubjectivity" set out by Simmons and Watson (2015), particularly when interactions led to shared laughter (Vorhaus, 2017). Overall, this research demonstrates very positively the developing capacities of these learners that close, sensitive observation can highlight.

The Reliability of coding Quest for Learning Milestones for Learners

The guidelines that accompany the Quest for Learning milestones set out in detail the difficulties that can arise when trying to observe and assess the capacities of learners with Profound and Multiple Learning Difficulties. The patience required, and the requirement to focus on a relatively limited repertoire of behaviours/movement (see appendix 1), and the often idiosyncratic, highly individual forms of communication used by these learners (Porter, Ouvry, Morgan, and Downs, 2001) are well noted. In spite of this, there was substantial evidence of independent agreement between the researcher and a member of staff when coding video data. There was routine agreement between the 2 coders in relation to whether or not the learners were demonstrating evidence of a range of the milestones set out in Quest for Learning, with no substantial disagreements between the coders arising. This provides evidence that members of staff may not always find it difficult to comprehend the capacities and communication of learners (Porter, Ouvry, Morgan and Downs, 2001). It must be noted that this particular finding occurred in the context of a piece of research focused on Quest for Learning, and in a context where the member of staff had the luxury of detailed analysis of rewatchable videos of the learners. It is likely that the body of evidence built up as part of this research could provide helpful training to staff to meet the issues set out by Aird (2001) and Lacey (2001).

Quest for Learning & The Curriculum

The positive findings of this research support the idea that the Quest for Learning materials and milestones could be very helpful in designing a varied (Maes, 2010), practically oriented (McNicholas, 2000, Dowrick, 2000) manner, that is fit for purpose (Imray and Hinchcliffe, 2012). However, it is worth restating that *"Quest is an assessment tool, and not the curriculum"* (CCEA, 2006, p. 10). Martin's (2006) cautions about an entirely assessment driven curriculum need to be borne in mind. Consideration also needs to be given to the extent to which quest for learning materials can address the range of developing sensory needs displayed by these learners (Poppes et al, 2016) as well as other therapeutic needs (McNicholas, 2010). Another minor concern to take into account was highlighted by Lacey (2009):

the milestones, for Routes for Learning, and by extension, Quest for Learning, focus relatively narrowly within the first year of life for typically developing learners, and don't provide much indication of next steps for learners demonstrating the most advanced milestones. While this may not be of concern for a majority of learners with PMLD, it is important to consider how best to assess and support the most able learners within this category.

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Appendices

Appendix 1. Coding Scheme

Milestones and descriptions (taken directly from Quest for Learning Materials)

Quest for Learning Milestone	Assessment Outcomes
1. Notices Stimuli	Look for: stilling (a momentary pause); turning (head, eyes, or body); lip/tongue movement; eye flickering; change in breathing; or tensing or relaxing.
2. Reacts to close contact with familiar adult	Look for: tensing or relaxing; change in breathing; stilling; eye flickering; or change in facial expression.
3. Responds to very obvious stimulus	Look for: (see 1 ;) or change in activity level; vocalising; open mouth/tongue movement; moving fingers, or example in sheepskin; or kicking.
4. Demonstrates brief memory for previously presented stimulus	Look for evidence of short-term memory, for example: a decline in interest when the stimulus is repeated; or recovery of interest when a new stimulus is offered.
5. Responds to familiar voice or other personal identified	Look for: stilling; tensing/relaxing; smiling; change in facial expression; turning of the head; fleeting eye contact; or reaching out/touching.
6. Responds to a range of stimuli	Look for: a change in activity level; facial expression; movement of eyes, lips, tongue; vocalisation; tensing/relaxing; or movement of arms/legs/fingers.
7. Turn takes in a one-to-one situation with an adult	Look for: signs of co-operating; or anticipating.
8. Responds to own name	Look for: vocalisation; lip/mouth movement; or tensing/relaxing. NB: Ensure that the learner is not responding to other cues such as tone of voice, a touch or staff's own reaction.
9. Responds consistently to one stimulus	Look for the learner responding in the same way each time a stimulus is presented.
10. Briefly follows a moving stimulus	Look for the learner following a stimulus with their eyes.
11. Shows behaviour which can be interpreted as rejection of some stimuli	Look for the learner signalling a desire to stop the activity or interaction, for example: turning away; pulling a face; or

	pushing.
12. Responds differently to different stimuli	Look for whether the learner appears to be waiting, for example: beginning to smile or laugh for a liked stimulus; or tensing in anticipation of a disliked stimulus.
13. Terminates interaction with an adult	Look for 'signals' at the end of an interaction, for example: turning away; closing/averting the eyes; tensing; vocalising; kicking; or pushing.
14. Anticipates repetitively presented stimulus	After repeated alternating presentations, look for the learner anticipating the next action, for example: turning eyes and/or head to the next position before the stimulus appears there; stiffening body; or widening eyes before the next presentation of a sound.
15. Objects to the end of an interaction	Look for: a reaction; or a signal that they want the 'exchange' to continue, for example eye movement, body movement or vocalisation.
16. Explores the environment with assistance	Look for the learner: moving their fingers or hand; smelling or trying to lick/mouth objects; or actively exploring objects in turn.
17. Anticipates familiar social routines	Look for signs of anticipation before the cue occurs, for example giggling while anticipating the tickle.
18. Redirects attention to a second object	Look for the learner losing interest in the first object and focusing attention on a new item.
19. Random activities cause effect	Look for: independent (but random) movement of hands or fingers; active exploration with the mouth or other parts of the body; or reaction to any 'effects' created.
20. Looks briefly after a disappearing object	Look for the learner looking after the object as it disappears.
21. Responds with support or prompt to a reactive environment	Look for the learner making attempts to create an action or effect.
22. Communicates "more"	Look for: vocalisation; movement; changing facial expression; widening eyes; staring at an object; moving the arms; mouth opening; or reaching towards an object.
23. Contingency responding	Look for: the learner making something happen independently; the rate of action increasing when it has an effect, for example kicking increases when it causes a mobile to move; or whether the learner waits for a reward before

	pressing the switch again.
24. Purposeful action in everyday environment	Look for the learner deliberately making things happen in an everyday environment.
25. Changes behaviour in response to an interesting event nearby	Look for the learner 'noticing' a second event/stimulus and reacting or changing their behaviour, for example: turning; attending; or vocalising.
26. Contingency awareness	Look for the learner acting more consistently and with intent, for example: waiting for a reward to end before trying again; linking a particular action with its consequence; changing facial expression or concentration; or increasing accuracy.
27. Intentionally explores the environment	Look for any form of exploration: looking around; reaching out; or moving body.
28. Communicates "more" and "no more" through two different consistent actions	Look for: the established 'signal' that means 'more'; a response that indicates 'no more', for example: closing eyes turning away; and closing mouth. NB: Reinforce and build on this, responding consistently on every occasion.
29. "Looks" backwards/forwards between two objects	Look for the learner: looking backwards/forwards between the two objects; or attending to, or feeling, each object in turn.
30. Perseveres by repeating action for reward in social game	Look for the learner repeating a request for more, despite a delay.
31. Repeats an action when the first attempt is unsuccessful	Look for the learner failing in an action but trying again, modifying it and succeeding, for example: missing a switch the first time; or not depressing it sufficiently.
32. Attracts attention	Look for the learner trying to attract attention by shouting/waving/crying. NB: This might be a minimal response.
33. Initiates a social interaction/game	Look for the learner attempting to initiate a game/interaction or routine through a 'signal' used in 30 or by other means.
34. Object Permanence	Look for the learner 'searching' by: looking towards the point of disappearance; stilling; head turning; making a facial expression when a noise stops; searching briefly for an item which has been removed from grasp; or increased duration of searching.
35. Does two different actions in sequence to	Look for a decrease in time between the two actions. These should be done in sequence rather than pausing after the first

get a reward	action.
36. Selects from two or more items	Look for: the response to one item having a longer duration; an obvious change in activity level; increased eye contact with one item; a greater change in facial expression in response to one noise when two are presented in an alternating pattern; or an increased level of activity, for example arm or leg movements during a pause following a taste of one particular food.
37. Communicates choice to attentive adult	Look for obvious or increased attention to one of the items that communicates the learner's preference, for example: smiling; eye pointing; reaching; or turning towards a preferred item.
38. Modifies action when repeating action does not work	Look for the learner repeating an action then trying a new or modified action in an attempt to get a response.
39. Deliberately gains the attention of another person to satisfy a need	Look for the strategy that is used to gain attention with no prior intervention (particularly when the adult is not expecting it): vocalising until an adult appears, then stopping; pushing items off a tray and then smiling when an adult appears; or stopping activities to press a switch that has been consistently used (with support) to call an adult.
40. Shares attention	Look for the learner gaining the attention of an adult, for example: looking towards or indicating a stimulus and then looking back to the adult; stilling to a sound, or moving to music, and then looking back to the adult; touching an item and then feeling for the adult's hand; or touching the dog and smiling at the adult. Look for the learner showing pleasure in sharing, or trying to 'comment' on the item.
41. Expresses preference for items not present via symbolic means	Look for the learner: giving attention to one of the symbols for a preferred item; waiting for the item to be presented.
42. Early problem solving – tries new strategies when old one fails	Look for a reduction in the time that the learner tries the original action to gain a reward.
43. Exerts autonomy in a variety of contexts	Look for attempts to gain adult attention/make a request, for example by: vocalising; touching a symbol that indicates an item that is out of sight or reach; or timing switch-presses to get a desired result in a computer program.