

EARLY DEVELOPMENT – PMLD Maths and English

(Information taken from 'Equals PMLD SOW')

Assume that for the category of PMLD to apply, we would be looking at pupils who are functioning at a cognitive and linguistic level of less than two years or P1 to P3

Maths

The Three Developmental Stages of Circular Development

[Consistent with Piaget's (1952) Theory of Early Cognitive Development]

Primary Circular Reaction

- This refers to the reflexive level where the pupils respond only with reflexive actions.

Secondary Circular Reaction

- This is where pupils will voluntarily react with environment by, for example, noting change or indicating preferences.

Tertiary Circular Reactions

- At this level the pupil will be responsive to the environment and will explore and interact with it in a meaningful way

The Six Sensory Motor Series of Development

[as identified by Uzgiris and Hunt (1978) and Dunst (1980)]

1. *Visual pursuit and the Permanence of Objects (VP)* concerns the development of the concepts of objects independent existence
2. *Development of Means for Obtaining desired Environmental events (ME)* concerns the infant's ability to cause events or obtain objects which they have come to desire
3. *Development of Imitation (C)* refers to imitative behaviours elicited by the child which could be either vocal or gestural
4. *The Development of Operational Causality (OC)* refers to the pupil's ability to anticipate events

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5. *The Construction of Object Relations in Space(OS)* refers to the pupil's ability to recognise and appreciate that objects may differ in their position in space but still remain constant
6. *The Development of Schemes for Relating to Objects (RO)* concerns the way through which pupils interact with objects

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Uzgiris and Hunt – Breakdown of Scales

(from 'A Clinical and Educational Manual.....' C J Dunst)

Object Permanence

Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Fixates on an object held 8 – 10 inches above eyes		
Tracks object through 180 degree arc	<i>Pupil can be sitting or supine – Object held 10 inches in front of eyes – may be necessary to shake object to gain pupil's attention and find optimal focal point. If pupil focuses on adult rather than object stand behind the pupil</i>	Does pupil follow object
Lingers / searches at point of an objects disappearance –	<i>Pupil ideally needs to be seated- Once pupil has focused on object move object slowly to one side and out of view; after a few moments bring the object back from the opposite side</i>	Does pupil follow object to point of disappearance
Returns glance to starting position after object moves out of vision		
Secures partially hidden object	<i>Pupil ideally seated with both hands free to manipulate objects Use any object that the pupil is already interested in (such as a small doll or plastic animal) and demonstrates this by reaching for the object. Use a white non-transparent scarf (to minimise pupil's interest in the</i>	Pupil obtains the object by pulling it from under the screen and picking it up

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Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
	<i>scarf) to cover the object which is placed within his / her grasp; leave a small portion of the object visible. Does pupil remain interested and attempt to retrieve the object</i>	
Secures object completely hidden	<i>As above but this time completely cover object and bunch the cloth so the contours of the object are not visible, cover the object before the pupil grasps it</i>	Try to ascertain that the pupil is interested in the object and not in just pulling at the cloth
Reverse searching in anticipation of reappearance	<i>Pupil looks only at the point the object disappeared</i>	
Withdraws object held in hand following covering of hand with cloth		
Secures object hidden under a single screen	<i>It is important to work on a sound absorbing surface so that it is not the <u>sound</u> of the object that is enticing the pupil and an object that makes no sound of its own so that it is not indicating where the object has been placed</i>	
Secures object hidden with two screens	<i>As above but with a second dull cloth – hide the whole object alternately under either cloth</i>	Does the pupil lose interest or does he / she use a range of searching strategies
Secures objects hidden under one of two screens – hidden alternately		
Secures objects hidden under one of three screens – hidden alternately		

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Individual Stage of Development	<i>Adult Directions</i>	Pupil Reactions / Assessment
Secures objects hidden under a series of screens – hidden alternately		
Etc. etc.	<i>You can continue to use a range of strategies to make the hiding of an object more complex resulting in encouraging more and more complex responses from the pupil</i>	

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Means End		
Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Activity level increases or decreases on seeing an object	<i>Observation of pupil required</i>	
Pupil engages in hand watching		
Repeats arm movements to keep toy activated	<i>Adult needs to know the pupil's preferred hand of use</i>	
Visually directed reaching – hand and object both in view		
Visually directed reaching – brings closed hand up to object		
Visually directed reaching – shapes hand		
Drops one or both objects held in hands to obtain a third object		
Pushed obstruction out of way to obtain an object		
Pulls support to obtain an object placed on it		
Pupil uses some form of locomotion as a means to obtain an out of reach object	<i>Adult engages pupils attention in objects and then moves one object required for the play to the side so that pupil has to move / reach to obtain the object</i>	Does pupil just accept that part of the toy / game has been removed or try to retrieve it

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Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Pupil does not pull a support with object held above it	<i>Pupil should be seated with a table or long surface in front of them. You are trying to encourage the understanding that there is a variety of methods that can be used to retrieve objects</i>	
Does not pull either of two supports with object placed between them	<i>You are trying to establish that the pupil is making a connection between objects and that one object can be used to move / retrieve another and developing a range of problem solving skills</i>	
Pulls string along horizontal surface to obtain an object attached to it		
Pulls the correct one of two strings to obtain an object attached to it		
Uses string vertically – pulls object up from floor		
Uses t-stick as a tool to obtain an out of reach object		
Uses stick as a tool to obtain out of reach object	<i>Try to give pupils as many opportunities to develop problem solving skill rather than just presenting them with a solution</i>	
Opens and removes the contents of a small matchbox		

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Individual Stage of Development	<i>Adult Directions</i>	Pupil Reactions / Assessment
Invents method to place necklace into the container		
Solid ring – attempts to stack		
Shows foresight in placing necklace in the container		
Shows foresight in placing a chain into a matchbox		
Shows foresight by not stacking the solid ring		
Uses stick to push out a toy inserted in a clear tube		
Uses stick to push out a toy inserted in an opaque tube		

Development of Vocal Imitation

Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
	<p>Note: A sound is called <u>FAMILIAR</u> if it a vocalisation the pupil uses independently. A sound is called <u>UNFAMILIAR</u> if the pupil does not use that vocalisation independently.</p>	
<p>Responds to voice</p>	<p><i>You always need to catch the pupil in a happy mood and not tired before trying to illicit communication of any kind and also give the pupil time to become acquainted with the adult</i></p>	
<p>Vocalises other than crying</p>	<p><i>Listen for spontaneous vocalizations of the pupil and note whether he vocalizes sounds other than those indicating distress. Observe the pupil by him / herself and also while maintaining face to face contact Establish contact with pupil and after talking to him in an adult fashion utter one of the cooing sounds without genuine consonants (e.g. ah-i-ya; eh-uh-e- use a rise and fall pitch)do this for a few times and then stop and observe the pupils expression and behaviour</i></p>	<p>Listen for spontaneous vocalisations and note whether s/he vocalises sounds other than those indicating distress Record all cooing sounds that pupil makes and in what setting</p>
<p>Show positive response to familiar cooing sounds</p>		<p>Observe and record responses</p>

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Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Show positive response to familiar babbling sounds		Observe and record responses
Vocalises in response to cooing sounds		Observe and record responses
Vocalises similar sounds in response to cooing sounds		Observe and record responses
Imitates cooing sounds		Observe and record responses
Vocalises in response to babbling sounds	<i>As above using babbling sounds (e.g. ba-ba-ba; at-da-da; ma-ma-ma etc.)</i>	Observe and record responses
Vocalises similar sounds in response to babbling sounds		Observe and record responses
Vocalises in response to familiar words		Observe and record responses
Vocalises similar sounds in response to familiar words		Observe and record responses
Imitates babbling sounds		Observe and record responses
Imitates familiar words		
Vocalises in response to unfamiliar sound patterns		
Imitates unfamiliar sound patterns by gradual approximations	<i>e.g. brr; zzz; ree-ree-ree; faa-faa etc. etc.)</i>	

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Individual Stage of Development	<i>Adult Directions</i>	Pupil Reactions / Assessment
Imitates novel words by gradual approximations		
Imitates unfamiliar sound patterns		
Imitates one novel word		
Imitates two novel words		
Imitates at least four novel words	<i>In all these situations it is imperative that you develop a report with the pupil and that you are aware of the usual responses and sound patterns that the pupil uses</i>	

Development of Gestural Imitation

Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
	<p>Note: A gesture is called <u>FAMILIAR</u> if it an action the pupil uses independently in their own actions or play.</p> <p>A gesture is called <u>VISIBLE</u> if the pupil is able to see himself performing it. For example hitting a surface is a visible gesture, since the pupil can observe his own hand while he attempts to hit; but wrinkling his nose is not visible, since without a mirror, the pupil cannot observe himself performing this action</p>	
Attends to gestures performed by an adult		Observe and record responses
Performs consistent act in response to familiar, simple gestures	<p><i>Observe the pupil's play with objects, in order to determine which simple actions are familiar to him/her (e.g. patting an object; waving an arm; turning their wrist etc. etc.). When the pupil is not performing a particular action perform that action several times and wait to observe the pupil's response. Perform it again a few times and wait, then perform a different action</i></p>	Observe and record responses
Performs consistent act in response to complex gestures		Observe and record responses
Imitates familiar simple gestures		Observe and record responses

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Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Attempts to imitate complex gestures		Observe and record responses
Gradually imitates unfamiliar visible gestures	<i>e.g. opening and closing the fist ed hand; bending and straightening the index finger; drumming on a surface; scratching a surface (unfamiliar gestures are those that the pupil does not usually perform independently)</i>	Observe and record responses
Imitates unfamiliar visible gestures		Observe and record responses
Attempts to imitate, invisible gestures		Observe and record responses
Gradually imitates invisible gestures with object		Observe and record responses
Gradually imitates invisible gestures without object		Observe and record responses
Imitates one invisible gesture with object		Observe and record responses
Imitates one invisible gesture without object		Observe and record responses
Imitates two invisible gestures with object		Observe and record responses
Imitates two invisible gestures without object		Observe and record responses
Imitates three invisible gestures with object		Observe and record responses
Imitates three invisible gestures without object		Observe and record responses

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The Development of Operational Causality

Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Vocalises and /or smiles in response to adult talking		
Engages in hand watching	<i>There should be no other visually attractive objects within sight</i>	Can the pupil bring their hands into view and move them while they are in view
Repeats arm movements to keep a toy activated	<i>(Secondary Circular Reactions) Provide an object that can be activated by one of the earliest motor reactions e.g. hitting, or banging and which provides a change of visual/ auditory input when activated Discourage the pupil from grasping the object but encourage him/her to activate the object / toy in some way.</i>	
Uses procedure as a causal action in response to adult producing a repetitious action with toy	<i>Pupil uses a physical action (procedure) to indicate to the adult to activate a toy again e.g. hitting a surface with the palm of hand; waving arm; give pupil time to respond in pauses to indicate desire for action to be repeated</i>	
Uses procedure as a causal action in response to behaviour created by an adult	<i>Note: behaviour refers to the action the adult has produced / created</i>	Does the pupil try to recreate the action
Uses procedure as a causal action in response to behaviour created by an adult using a toy		

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Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Touches adults hand as causal action – behaviour created by agent – no toy		
Touches adults hand as causal action – behaviour created by agent – using a toy		
Touches adults hand or object as a causal action in response to adult activating a mechanical toy		
Pulls or pushes adult’s hand to have a behaviour instigated or repeated		
Repeats behaviour (shows off) to maintain adult attention		
Gives object to adult as causal action to have it activated		
Uses gestural plus visual/vocal behaviours to have as adult repeat or instigate a desired action		
Attempt to activate a mechanical toy following demonstration		
Searches for causal mechanism needed to activate a wind up toy (no demonstration)		

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Construction of Objects in Space

Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Searches for sound with eyes		
Alternates glance slowly between two visually presented objects	<i>Use two visually distinct objects with very different properties Reverse the position of the two objects after about 20 seconds</i>	Does the pupil alternate glances between each object
Alternates glance rapidly between two visually presented objects		
Localises the source of sound visually		
Secures visually presented objects		
Follows trajectory of objects falling within view	<i>The object should land within view of the pupil</i>	Does the pupil attempt to retrieve the object
Follows trajectory of objects falling out of view		Does the pupil attempt to locate the object
Turns mirror over to view functional side	<i>Show the pupil the 'right' side of an object</i>	Does the pupil reverse / turn the object to its functional side
Turns photograph or other picture around to view functional side		
Places (drops) objects in a container		
Stirs with a spoon		
Uses hammer-stick to play xylophone		

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Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Bangs spoon on inverted cup		
Dumps contents out of narrow-necked container		
Places objects in a cup – dumps out contents		
Builds tower of two cubes		
Places rings on stacking stick		
Allows an object to move down an incline		
Makes simple detour to obtain a desired object		
Indicates the absence of familiar persons		

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Development of Schemes for Relating to Objects

Individual Stage of Development	Adult Directions	Pupil Reactions / Assessment
Retains object placed in hand for 10 to 15 seconds		
Mouths object placed in hand	<i>Present objects one at a time and observe reactions</i>	
Visually inspects objects held in hands		
Uses simple motor schemes (bang or hit)		
Uses simple motor schemes (shaking or waving) independent of hitting a surface		
Drops or throws objects – no visual monitoring		
Rotates objects examining the various surfaces		
Uses complex motor schemes (slides crumples)	<i>Pupils produce appropriate actions to the object e.g. crumples or tears paper; rubbing one object against another</i>	
Drops or throws objects – visual monitoring of results	<i>Pupil may deliberately 'let go' of an object to see the effect</i>	
Socially instigate actions – self and others	<i>e.g. Pretends to drink from a cup</i>	
Socially instigated actions - inanimate objects		

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Individual Stage of Development	<i>Adult Directions</i>	Pupil Reactions / Assessment
Gives object to another person to instigate social interaction		
Shows objects (does not give) to others		
Spontaneously names objects, persons, actions etc.		
Symbolic play – uses one object as a signifier for another object (e.g. stick for a spoon)		

English

Language and Literacy teaching should develop –

- Understanding and interpretation of the environment
- Listening skills
- Ability to build relationships
- Ability to communicate as effectively as possible
- Ability to make choices
- Auditory and visual perception skills
- Fine motor skills and hand/eye coordination

THESE AIMS ARE EXPANDED AS -

Talking and Communicating

Pupils should:

- Show the ability to communicate needs, wants, ideas and feelings to a variety of people both verbally and non-verbally, enabling the pupil to interact with others and to influence their surroundings

Listening and Interpreting

Pupils should:

- Develop listening and comprehension skills, interpreting sound, gesture, signs, responding appropriately and be able to focus their attention.

Reading and Visual Awareness

Pupils should:

- Develop the ability to look and interpret visual messages, including the recognition and discrimination of signs/symbols
- Develop an interest in books and enjoyment of stories
- Have access to a wide variety of age appropriate books

Writing and Recording

Pupils should:

- Develop hand/eye coordination that may lead to the emergence of mark making/hand writing skills
- Develop an understanding that objects, pictures and symbols, and the written word all represent the spoken word and therefore carry meaning. They can be used to record.
- Develop writing skills – using the adult as scribe, where necessary

Features of Progression

To ensure pupils make progress in Language and Literacy, teaching should provide opportunities for pupils as they move through the school to progress:

- From enjoying interaction to talking, signing, using symbols, pictures, objects of reference and communication aids
- From responding to noise and vibration to listening and responding with fluency using speech, signs, symbols, objects or pictures or communication aids
- From focusing on people and objects to understanding that words, symbols, photos and pictures carry meaning
- From responding to touch to writing or recording their own name

Basic Principles

- Adults are encouraged to use single objects, photos or words to cue pupils into an activity.
- Pupils names should be spoken first to ensure attention
- Vocabulary should be kept to a minimum
- Key words should be identified and noted for all activities to ensure there is a common vocabulary which is used by all staff and reinforced wherever possible
- Adults will need to be sensitive to pupils with PMLD to ensure they allow time for them to demonstrate their awareness and response to the task
- Adults also need to be skilled in observing pupils so that they can detect when a pupil has made a meaningful response.
- When working with pupils with PMLD, adults must be aware of the different postures in to which the children are placed and the effect this can have on their responses to activities and the learning that takes place.
- An important aspect of working with pupils with PMLD is for the teacher to access the pupil's world at a level at which the pupil can understand. Adults need to empathise with the child to appreciate their level of functioning and understanding. One must not assume that because the child makes little or no visible response that learning is not taking place. It is the adult's role to observe their pupils in order to note consistently repeated actions that are not related to reflex movements but show some awareness of their surroundings, the people in it and response to the experiences offered.

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- A ‘total communication’ approach is vital. This could include the use of spoken word, symbols, signing, electronic communication and objects of reference and structured teach schedules.
- It is important that pupils’ ability to understand and express themselves is facilitated by a range of strategies