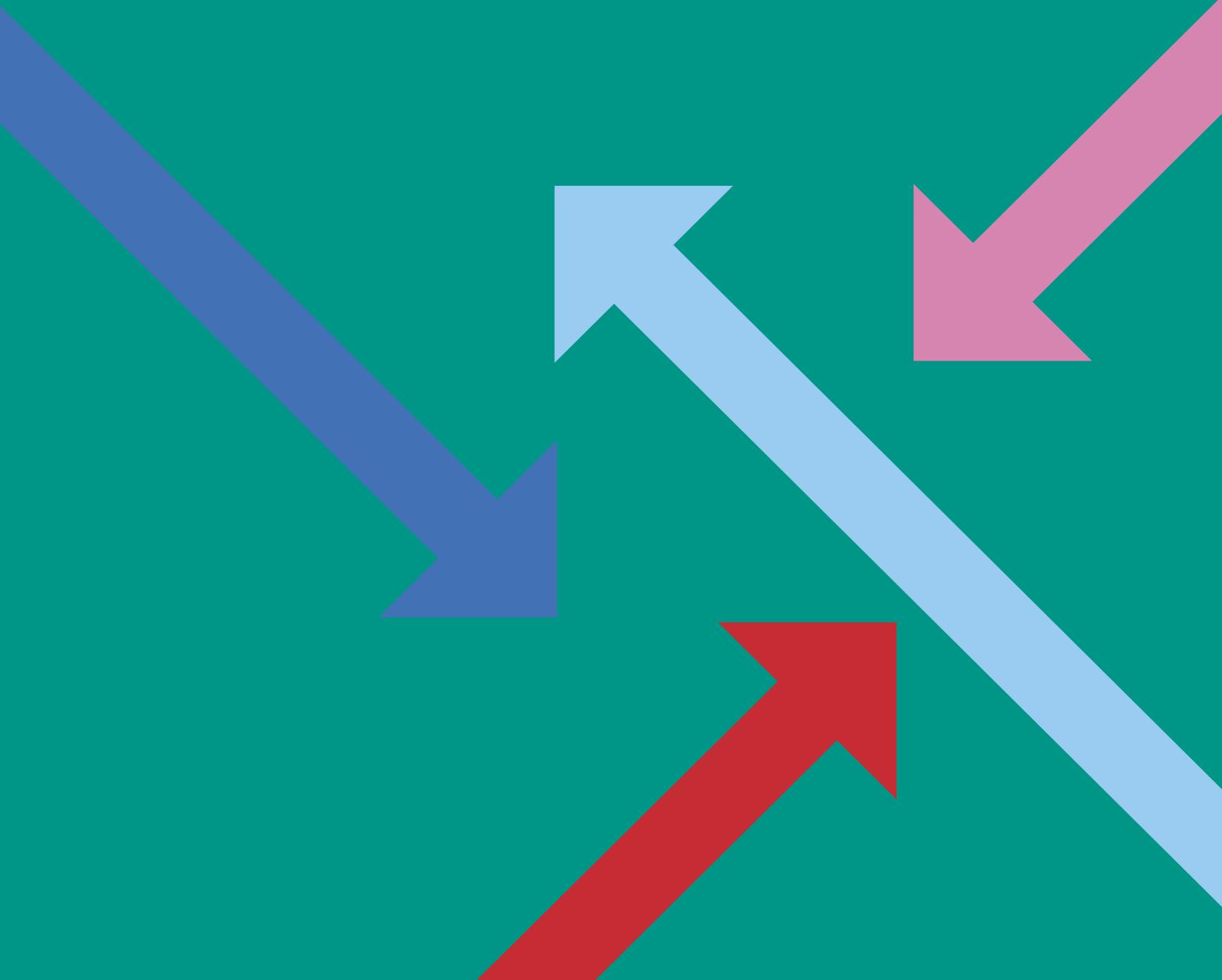




Routes for Learning: Assessment booklet



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Introduction

This booklet forms the basis of the Routes for Learning assessment. The principles behind the assessment and guidance on meeting the needs of learners with profound and multiple learning difficulties (PMLD) are provided in *Routes for Learning: Guidance*. Practitioners should read this guidance, in particular the section on ‘Using Routes for Learning to support assessment’ (pages 11–13), before beginning to use this assessment booklet. This assessment booklet should be used in conjunction with the *Routes for Learning: Routemap* and the Routes for Learning videos which provide clear examples of learners who show the behaviours. The complete suite of Routes for Learning materials can be found online at hwb.gov.wales/curriculum-for-wales/routes-for-learning.

This assessment booklet provides greater detail about the behaviours shown on the Routemap. For each Routemap box (or ‘step’), suitable assessment activities are suggested, along with things to look for during the activity, and teaching strategies which will help the learner to progress. A specification is provided to ensure that every step can be clearly distinguished from others. Narrative examples are also given showing how two different learners demonstrated behaviour consistent with the Routemap box.

The earliest behaviours observed in learners with PMLD are shown at the top of the Routemap. Different learners will follow a range of pathways progressing downwards through the boxes. The key milestones through which every learner is expected to pass are shown in orange boxes on the Routemap and information about them is presented in orange in this assessment booklet. Learners can take different routes through various ‘steps’ (green boxes) to reach these milestones.

Although the Routemap boxes are numbered 1 to 43 (with no number 8), learners will not necessarily move through them in numerical order¹. To further emphasise the importance of this feature of Routes for Learning, the boxes are not presented as a numerical sequence in this assessment booklet. Instead, they have been grouped into twelve ‘themes’.

Each theme is intended to reflect behaviours which are closely related, while drawing attention to what is specific about each of the boxes. Within the themes, Routemap boxes are arranged numerically but learners will not necessarily achieve them in a strict hierarchical sequence. The themes themselves are not discrete routes which we would necessarily expect learners to follow, as they are interlinked in many ways.

The boxes at the bottom of the Routemap (41–43) are the most advanced likely to be achieved by learners with PMLD and overlap with outcomes which might be expected of young learners with severe learning difficulties (SLD).

The left-hand side of the Routemap shows behaviours relating to communication and

¹ For further information regarding the numbering of the Routemap, please see the explanatory note at hwb.gov.wales/curriculum-for-wales/routes-for-learning.

social interaction skills, while interactions which are more centred on the learner's environment are shown towards the right. In the middle region are aspects of early cognitive development which are not always observable directly but can be inferred from learners' behaviour. Individual themes are not defined by these domains. However, interactions with people are strongly represented in Themes 2, 4, 7, 10 and 12; growing sophistication in learners' interactions with things is prominent in Themes 1, 6 and 11, and Themes 3, 5, 8 and 9 strongly emphasise cognitive development.

The twelve themes provide a further way of considering the connections between boxes and should assist practitioners in reflecting upon areas of the Routemap where individual learners are currently showing potential. Each theme includes introductory information and several key questions which practitioners should consider when reflecting on evidence that has been gathered about learners' responses and prior to deciding which specific Routemap box the evidence might represent.

The twelve Routemap themes in this assessment booklet are:

1. Responding to stimuli
2. Responding to people
3. Responding to pattern in repetition
4. Signalling preferences
5. Keeping track of objects
6. Acting on the physical environment
7. Being sociable
8. Changing focus
9. Connecting actions with outcomes
10. Acting to engage others
11. Solving problems
12. Choosing options.

The Routemap boxes and milestones that relate to each theme are as follows.

- **Theme 1: Responding to stimuli**
 - Routemap milestone 1 (Notices stimuli)
 - Routemap box 3 (Responds to very obvious stimulus)
 - Routemap box 6 (Responds to range of stimuli)
 - Routemap milestone 9 (Responds consistently to one stimulus)
 - Routemap box 12 (Responds differently to different stimuli)

- **Theme 2: Responding to people**
 - Routemap box 2 (Responds to close physical contact with familiar person)
 - Routemap box 5 (Responds to familiar voice or other personal identifier)
- **Theme 3: Responding to pattern in repetition**
 - Routemap box 4 (Demonstrates familiarity with recently presented stimulus)
 - Routemap box 14 (Anticipates repetitively presented stimulus)
- **Theme 4: Signalling preferences**
 - Routemap box 7 (Supported 1:1 turn-taking with adult)
 - Routemap box 11 (Responds to some stimuli in a way that can be interpreted as rejection)
 - Routemap box 13 (Terminates interaction with adult)
 - Routemap box 22 (Responds in ways that can be interpreted as meaning 'more')
 - Routemap box 28 (Communicates 'more'/'no more' through two different consistent actions)
- **Theme 5: Keeping track of objects**
 - Routemap box 10 (Briefly follows moving stimulus)
 - Routemap box 20 (Looks briefly after object disappearing from their field of vision)
 - **Routemap milestone 34 (Object permanence)**
- **Theme 6: Acting on the physical environment**
 - Routemap box 16 (With support explores immediate environment)
 - Routemap box 21 (In reactive environment repeats action which obtains sensory feedback)
 - Routemap box 24 (In an everyday environment repeats action which obtains sensory feedback)
 - Routemap box 27 (Begins to explore immediate environment with intent)
- **Theme 7: Being sociable**
 - Routemap box 17 (Anticipates within familiar social routines)
 - Routemap box 30 (In the context of a familiar social game, perseveres by repeating action in order to get reward)
 - Routemap box 33 (Initiates social game)
 - Routemap box 40 (Joint attention)
- **Theme 8: Changing focus**
 - Routemap box 18 (Redirects attention to a second object)
 - Routemap box 25 (Changes behaviour in response to interesting event nearby)
 - Routemap box 29 ('Looks' backwards and forwards between two objects (knows two objects are present))

- **Theme 9: Connecting actions with outcomes**
 - Routemap box 19 (Accidental actions cause effect)
 - Routemap milestone 23 (Responds to cause and effect)
 - Routemap milestone 26 (Shows understanding that their action causes a specific effect)
- **Theme 10: Acting to engage others**
 - Routemap box 15 (Objects to termination of interaction)
 - Routemap box 32 (Attracts attention)
 - Routemap box 39 (Deliberately attracts attention of another person in order to communicate need)
 - Routemap milestone 43 (Initiates strategies to achieve desired results in a variety of contexts (exercises autonomy))
- **Theme 11: Solving problems**
 - Routemap box 31 (Repeats action when first attempt unsuccessful)
 - Routemap box 35 (Does two different actions in sequence to get reward)
 - Routemap box 38 (Modifies action when repeating action does not work)
 - Routemap box 42 (Early problem-solving – tries new strategy when old one fails)
- **Theme 12: Choosing options**
 - Routemap box 36 (Selects from two or more items)
 - Routemap box 37 (Communicates choice to attentive adult)
 - Routemap box 41 (Expresses preference for items not present via symbolic means)

Theme 1: Responding to stimuli

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

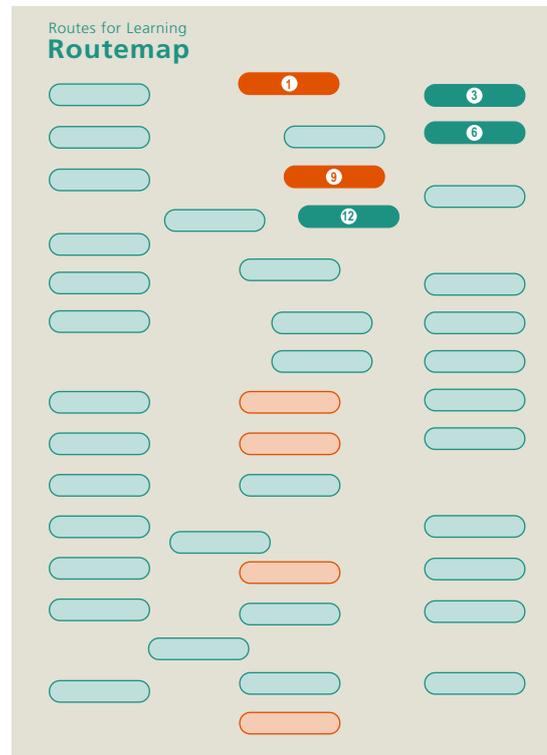
This theme groups behaviours which learners may demonstrate when they are presented with sensory experiences.

Some of the earliest Routemap boxes are represented in this theme. Assessing these boxes requires careful observation of changes in the learner's behaviour when sensory stimuli are systematically presented to them. Assessment undertaken for this theme establishes information about:

- the range and sophistication of motor responses available to the learner
- the learner's available sensory modalities and preferences
- the kinds of stimuli that capture the learner's attention
- their likes and dislikes.

Assessing learners responding to stimuli

- It is helpful to record assessment activities on video, especially if the learner appears to make no obvious responses. Watch any video you have made with members of the class team and then discuss what you observe. Family members may be able to offer additional insights.
- The Affective Communication Assessment (ACA)² may help you to structure your observations and discussions.
- Try to find out and record which of the learner's senses are the strongest. Use these first in future activities, but continue to offer other sensory experiences too.
- When assessing learners' visual responses, the Eye-Pointing Classification Scale (eyePoint scale)³ may be helpful. It describes looking behaviours relating to eye-pointing in non-speaking children with cerebral palsy affecting the whole body.



² Coupe, J., Barton, L., Barber, M., Collins, L., Levy, D. and Murphy, D. (1985) *Affective Communication Assessment*. Manchester: Melland School.

³ University College London and Great Ormond Street Hospital. *Eye-Pointing Classification Scale*. Website: www.ucl.ac.uk/gaze

- Start with a very obvious stimulus on or close to the body. Learners may respond to a familiar face or a gentle movement.
- For any stimulus in any sensory modality, try a 'burst/pause' (on/off) pattern, waiting between presentations of the stimulus so that the learner has a chance to experience the difference.
- When no response is observed, make the stimulus more obvious, increasing the contrast between the stimulus and the background. However, try to avoid making the stimulus so loud that the learner has a startle response.
- See 'Tactile learning' on pages 38–39 of *Routes for Learning: Guidance* for additional information about touch.
- Consult your local authority sensory service for further advice about visual impairment.

Key questions

When considering assessment evidence and how it might relate to particular Routemap boxes in this sequence, the following key questions should be asked.

- Is any change in behaviour definitely due to the stimulus (rather than to an internal sensation or a reflex movement)?
- To what extent is any response 'repeatable' and what conditions are required to achieve this?
- What range of stimuli elicit a response?
- What range of responses can the learner make?

1 Notices stimuli

Assessment activities/things to try

Introduce a stimulus, then pause.

- Present vibration, e.g. massager or vibrating cushion.
- Smear a small amount of a taste on the learner's lips.
- Hold a jar of something strong-smelling under the learner's nose.
- Place the learner's hand on a hot-water bottle covered with soft fabric, on something rough textured like sandpaper, or under a flow of warm water.
- Play music or a familiar song; use musical instruments.
- Present a torch reflected on a shiny surface. If there's no response, try moving it slightly.

Things to look for

Look for any changes in behaviour which are not reflex responses, for example:

- stilling (a momentary pause)
- turning (head, eyes or body)
- lip/tongue movement
- nostrils flaring
- an eye flicker
- a change in breathing
- tensing or relaxing (you may need to be in close physical contact in order to perceive this).

Teaching strategies (to move the learner towards this step)

Using two staff, one supporting the learner in a sitting position and one at the front, try gently pulling the learner backwards and forwards, and then pausing.

Try different parts of the body (soles of feet or back of neck may be more sensitive areas).

Try moving the learner's hand (especially the fingertips) in sheepskin, gel, warm water, etc.

Try sounds of different frequencies, timbre and duration.

In a darkened corner, present a repeated pattern of 'stimulus: no-stimulus', i.e. light: no light.

Distinguishing this step from others

The learner's behaviour shows a change of some kind in the presence of the stimulus.

This change of behaviour is not obviously a reflex (e.g. a startle), nor a response to some internal sensation (e.g. discomfort or hunger).

The change in behaviour may be fleeting and low in intensity. It may only occur in the presence of very specific or arresting stimuli and in very controlled sensory environments (e.g. a dark room).

The specific change of behaviour may only be noticeable following very careful systematic observation and recording and by those who know the learner well.

Where 'noticing' relates to the visual modality, this step is consistent with Level V of the eyePoint Scale (Other Visual Behaviours):

- 'Acknowledging the presence of objects without clearly fixing on them.
- Visual attention given to objects is fleeting and not repeated'.⁴

Examples

Amelia glanced fleetingly towards the light source when it was presented in the dark corner.

Ieuan moved his arm slightly when it was stroked with a soft material.

⁴ University College London and Great Ormond Street Hospital. *Eye-Pointing Classification Scale*. Website: www.ucl.ac.uk/gaze

3 Responds to very obvious stimulus

Assessment activities/things to try

Present an obvious stimulus to the learner in a similar way to Routemap milestone 1 (Notices stimuli), taking care not to cause a startle. Use the information you have gathered about preferred sense modalities and record outcomes.

Try new tastes in the form of a lip balm smear.

Try a vibrating cushion, resonance board or a water bed.

Present different textures, such as warm sand, with which the learner can engage. Apply them to different parts of the body.

Try using musical instruments, tapes and musical toys.

Use peek-a-boo, puppets and pop-up toys.

Things to look for

Look for:

- a change in activity level
- vocalising
- opening of the mouth/tongue movement
- moving fingers, e.g. in sheepskin
- a kick.

Teaching strategies (to move the learner towards this step)

Increase the range, complexity and variety of stimuli you used in Routemap milestone 1 (Notices stimuli). The level of prompting/exaggeration used should be gradually reduced to a more natural level.

If the learner has only shown a response in one sense modality up to this point, then you should seek to extend this to other available senses. Consider your positioning in relation to the learner's visual field/auditory ability etc. (see 'Barriers to learning' on pages 36–41 of *Routes for Learning: Guidance*).

Take care when presenting an 'unexpected' stimulus not to cause a startle reaction. It is good practice to warn the learner of forthcoming events by touch or voice.

Care must be taken with regard to placement/positioning of visual stimuli. Consider the learner's visual field. Avoid the learner having to look up as this may cause stiffening and/or backwards movement (seek advice from a physiotherapist).

Distinguishing this step from others

The learner's behaviour changes in the presence of the stimulus.

It is not a reflex, nor a response to something internal.

When compared to the change in behaviour recorded for Routemap milestone 1 (Notices stimuli), it:

- is greater in intensity
- may incorporate larger, less fleeting movements
- may coincide more obviously with the stimulus
- may occur more readily and more frequently.

It may therefore be easier to detect and interpret as a 'response' even by someone who knows the learner less well.

Examples

Jack opened his eyes wide and moved his head up when the light changed in the dark room.

Megan responds to wafts of warm air from a fan with short vocalisations and excited movements of her arms.

6 Responds to range of stimuli

Assessment activities/things to try

Develop activities you used previously for Routemap box 3 (Responds to very obvious stimulus), increasing the range, complexity and variety of stimuli.

Things to look for

Look for:

- a change in activity level or facial expression
- movement of eyes, lips, tongue
- vocalisation
- tensing/relaxing
- movement of arms/legs/fingers.

Teaching strategies (to move the learner towards this step)

Further increase the range, complexity and variety of stimuli you used in Routemap milestone 1 (Notices stimuli).

Gradually reduce prompting and level of stimulation to a more natural level.

If the learner has only shown a response in one sense modality up to this point, then you should seek to extend this to other available senses. Consider your positioning in relation to the learner's visual field/auditory ability, etc. (see 'Barriers to learning' on pages 36–41 of *Routes for Learning: Guidance*) In addition, see the information regarding Routemap box 3 (Responds to very obvious stimulus) on page 10 of this assessment booklet.

Distinguishing this step from others

The learner responds to a wider range and variety of different stimuli.

The range of stimuli may extend beyond those specifically designed to give strong sensory stimulation.

Some responses may occur outside of controlled sensory environments.

As in Routemap box 3 (Responds to very obvious stimulus), the learner's behaviour in the presence of the stimuli is easy to detect, and can be readily interpreted as a response.

The learner may now show responses in a number of sensory modalities and it is becoming easier to discern stimuli they like or dislike.

Examples

Sean happily explored soft, furry materials, but when presented with brushes and sandpaper, he pulled his hands away.

Seren seems to like the soft textures of our 'sea' sensory story but not the feel of cold water; she pulled her hands out. She will splash her hands in warm water. She seems to like chocolate to taste, but appears not to be keen on bland mashed potato.

9 Responds consistently to one stimulus

Assessment activities/things to try

Present a familiar visual/auditory/tactile/other sensory stimulus which has been used consistently with the learner. Repeat in the same way several times (but not so often that the learner 'habituates' or gets bored of the stimulus).

Things to look for

Look for the learner responding in the same way each time a stimulus is presented.
It should be noted that for a variety of reasons the responses of learners with PMLD may not be 'consistent' from day to day.

Teaching strategies (to move the learner towards this step)

Check that the learner is comfortable and secure (see 'Some key principles for effective learning' on page 32 of *Routes for Learning: Guidance*).

Distinguishing this step from others

The learner responds in a similar way each time when a specific stimulus is repeatedly presented.

The learner's behaviour in the presence of the stimulus can be readily interpreted as a response.

In relation to the learner's 'looking' behaviour, this step corresponds with Level IV of the eyePoint Scale (Fixes Gaze):

- 'Consistent active ability to fix and hold gaze on ... a stationary target'.⁵

Examples

Aaron always smiles when he hears the voice of his taxi guide.

Sioned does not like the sound made by hook-and-loop fasteners and flinches every time she hears them torn apart.

⁵ University College London and Great Ormond Street Hospital. *Eye-Pointing Classification Scale*.
Website: www.ucl.ac.uk/gaze

12 Responds differently to different stimuli

Assessment activities/things to try

Present stimuli believed to be strongly liked or disliked and note the learner's reactions.

Do stimuli believed to be liked get different, broadly consistent reactions to those believed to be disliked?

Things to look for

Look for the learner responding in a different way to:

- one kind of object or sensory experience compared to another
- one sensory modality (e.g. a sound) as opposed to another (e.g. a taste or a smell)
- objects and sensory experiences as opposed to interactions with people.

Teaching strategies (to move the learner towards this step)

Try additional strong stimuli in a variety of modalities. Repeat on a number of occasions.

After consulting a physiotherapist try the following.

Place the learner on a thick blanket with the head supported and sweep and swirl the blanket along a slippery floor, building in pauses for a response.

Give the learner a taste/smear of something they are likely to like/dislike, e.g. something with a strong, distinctive taste such as yeast extract, lemon juice, rhubarb, chocolate or strawberry. Different flavoured lip balms could also be used.

Present eucalyptus or another strong smell from a smell bank.

N.B. Do not repeatedly present stimuli which get a 'dislike' reaction on the same occasion. Instead acknowledge the learner's communication and remove the stimulus.

Distinguishing this step from others

The learner demonstrates a number of different behaviours when responding to a range of stimuli.

Differences in their responses provide clear evidence of personal preferences.

Examples

Martin loves being sung to in Welsh and will always respond with animation to Welsh music and speech. He does not like having his hands placed into cold water or paint and loud music makes him jump.

Tahayra will pick her head up when we leave the school building to go out into the fresh air. She will look up at the lights as we move from one part of the building to another. Tahayra laughs if tickled but pulls away and cries at massage on her arm. She completely ignores bubbles, but rocks back and forward when loud music is playing.

Theme 2: Responding to people

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate when they encounter another person.

In the context of a setting/school with calm, predictable routines, practitioners respond with consistent warmth and attention to the needs of learners as they arise. As a result, learners come to feel safe and secure with the adults who become their 'communication partners'.

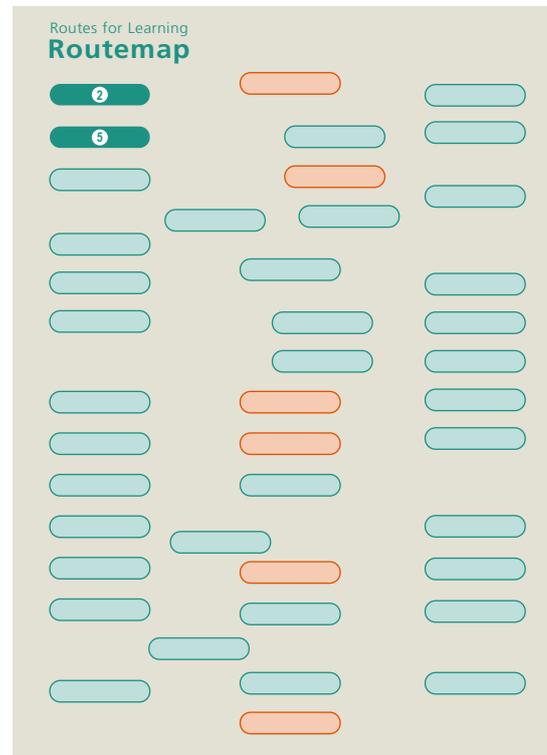
Assessing learners' responses to people

Initially, learners' responses may be difficult to interpret but familiar communication partners may take them to indicate discomfort, comfort or another sensation relating to their well-being, and will respond accordingly. Day-to-day fluctuations in learners' health and level of arousal may affect their responses on particular occasions.

People who know the learner well can suggest activities that will maximise their response. They may also suggest contexts or situations that might be good for eliciting these responses and share information about how responses differ in different settings.

For Routemap box 2 (Responds to close physical contact with familiar person), a social interaction involving close physical contact is used as a context for assessing any behaviours which are 'voluntary' (i.e. under a learner's own control, rather than reflex responses). Because these behaviours happen in very close proximity to the learner, video might be intrusive here but the communication partner can observe and record (perhaps using the Affective Communication Assessment⁶) with a view to identifying the learner's most reliable responses and interpreting what they might mean.

At this very early stage of the Routemap, it may not be clear which of the learner's senses are most useful. So, smell and texture, as well as the way the adult handles the learner, may be at least as important as vision and hearing. For this reason, it may be useful for people who come into contact with the learner regularly to have an object or carry something with a texture that is unique to them – their personal identifier. Routemap box 5 (Responds to familiar voice or other personal identifier) seeks evidence that learners



⁶ Coupe, J., Barton, L., Barber, M., Collins, L., Levy, D. and Murphy, D. (1985) *Affective Communication Assessment*. Manchester: Melland School.

respond positively to close social interactions, especially when these involve partners they know well and trust.

At the early stages, learners' responses are likely to be very dependent on the context and specific activity.

Physical contact is a pre-requisite when interacting with learners with PMLD and especially when assessing the Routemap boxes represented in this theme. Schools should have a policy for 'safe touch' which informs the way this is interpreted.

Some learners with PMLD have movements, like rocking, that they engage in for much of the time. The reduction or cessation of these movements (stilling) might be the best indicator that they are responding to the presence of a person.

Key questions

When considering assessment evidence and how it might relate to the particular Routemap boxes in this sequence, the following key questions should be asked.

- Who are the familiar people in this learner's life?
- How does the learner like to be touched and handled?
- What senses do we think the learner uses to register the presence of another person?
- Is close physical proximity necessary to elicit a response?
- What responses do they show that tell us that a stimulus has been noticed?

2 Responds to close physical contact with familiar person

Assessment activities/things to try

Hold the learner and talk or sing, leaving pauses for any response.

Things to look for

Look for any changes in behaviour which are not reflex responses, for example:

- stilling (a momentary pause)
- turning (head, eyes or body)
- lip/tongue movement
- an eye flicker
- a change in breathing
- tensing or relaxing (you may need to be in close physical contact in order to perceive this).

Teaching strategies (to move the learner towards this step)

Choose the learner's strongest sense to start.

If the learner responds best to auditory stimuli, try talking and singing close to the learner, with pauses for careful observation of possible responses.

If the learner responds well to visual stimuli, try getting close and exaggerating your facial expression.

Then combine visual with auditory input.

Distinguishing this step from others

The learner's behaviour shows a change of some kind while they are in close physical contact with someone they know well.

This change of behaviour is not obviously a reflex (e.g. a startle), nor a response to some internal sensation (e.g. discomfort or hunger).

It can be interpreted as a response to the familiar adult or to something the familiar adult is doing.

The change in behaviour may be fleeting and/or low in intensity.

Examples

Nadia will curl into our body if one of us hugs her on their lap. In this position, she will start to smile if we sing one of her favourite nursery rhymes.

When nervous, Lee wants contact to be closer and holds the adult tight. He will sometimes vocalise when on our lap and we chat to him.

5 Responds to familiar voice or other personal identifier

Assessment activities/things to try

Sit close to the learner – hug/touch.
 Move towards the learner, speaking or singing.
 Draw attention to particular features, e.g. exaggeration of a facial expression, the feel of long hair, a perfume smell, etc.

Things to look for

Look for:

- stilling/tensing or relaxing
- smiling or a change in facial expression
- turning of the head
- fleeting eye contact
- reaching out/touching.

Teaching strategies (to move the learner towards this step)

Ensure that all practitioners who are in regular contact with the learner have a personal identifier or action. This should ideally be an integral part of each person, e.g. long hair, a beard, etc.
 Encourage voice recognition – use the learner’s name on approach and talk using consistent language.
 For learners with a visual or hearing impairment, a personal, tactile sign may be used.
 If the learner is tactile defensive, try other senses.

Distinguishing this step from others

The learner’s response to a person they know very well is different from their response to a stranger.

When someone very familiar is near, the learner calms down, or continues to be relaxed. They may turn towards or otherwise show interest in that person.

Their response to someone unfamiliar is likely to appear more neutral, anxious or uncertain. If in distress, they may not be comforted.

Examples

Kamal will cry if he is supported by someone he doesn’t know (e.g. supply staff) but will calm when one of the familiar staff takes over. He smiles if he sees or hears his taxi escort nearby.

Carys is very aware of different voices. She will turn as soon as she hears her father’s voice as he comes through the classroom door.

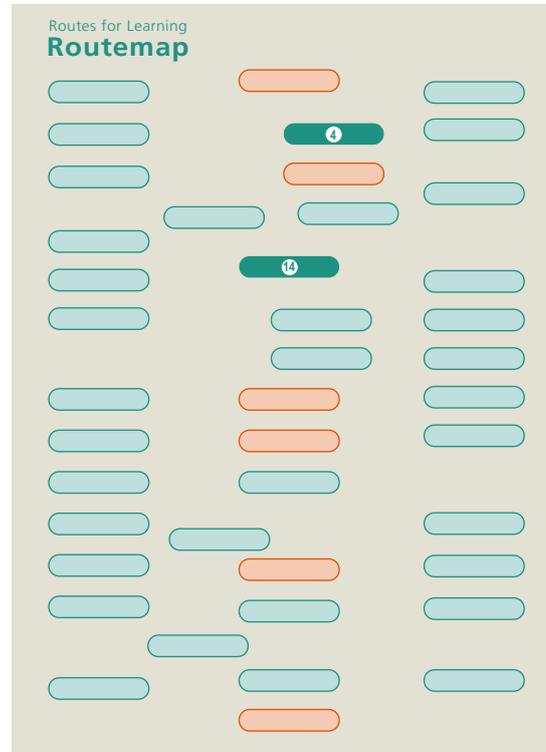
Theme 3: Responding to pattern in repetition

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate when they are presented repeatedly with the same stimulus.

Their responses provide evidence about key aspects of cognition and can demonstrate that the learner is:

- sensitive to the properties of a stimulus
- able to retain a brief memory of those properties
- able to distinguish between recently presented stimuli and those which are 'novel'
- sensitive to pattern when a stimulus is repeatedly presented.



Assessing learners' responses to repetitively presented stimuli

Routemap boxes in this theme provide information about a learner's attention to stimuli. There is strong evidence from cognitive neuroscience that attention is not a 'unitary' process but involves a number of separate, but inter-connected systems which govern aspects of attention in different ways. Of greatest relevance here are 'selective' attention, whereby the learner orientates swiftly and selectively to more salient (e.g. larger, stronger, more personally significant) stimuli or features of stimuli, and 'sustained' attention through which the specific features and details of a stimulus are more closely examined. 'Sustained' attention takes longer because time is needed for processing to occur.

If a learner looks for less time when a stimulus is re-presented ('habituation'), this provides evidence that during the previous presentation they have processed its features sufficiently to retain a 'recognition memory' (at least for the period of the delay until the stimulus is re-presented). They look for less time because they do not need to re-process information about it and, as a result, it no longer interests them. At this stage of the Routemap, the delay between re-presentations of the stimulus may need to be as short as two to three seconds. Assessment should also take account of the possibility that fatigue (e.g. as a result of physical effort, pain or poor sleep) can also lead a learner with PMLD to respond less.

The recovery of interest when a new or altered stimulus is presented ('dishabituation') shows that, especially at this stage of development, learners are very motivated by 'novelty'. This phenomenon also provides evidence that the learner can discriminate the 'novel' stimulus from the previous (habituated) stimulus. For this reason, habituation is very frequently used in the design of research into child cognitive development.

It is possible to assess most Routemap boxes in a fairly 'natural' way through interactions with the learner as they occur within ongoing curricular activities. Assessing the learner in relation to the boxes in this theme may not feel quite as natural. There is a need for greater precision if accurate inferences are to be made about cognitive processes (which we cannot observe directly). It is, for instance, advisable to use a stopwatch or timer when assessing Routemap box 4 (Demonstrates familiarity with recently presented stimulus) and to record accurately the duration of a learner's attention. This may make the context feel rather more 'test-like' but the accuracy of judgements will be improved.

Routemap box 14 (Anticipates repetitively presented stimulus) is concerned with 'anticipatory' attention and provides evidence that a learner is able to form expectations about a simple, repeating sequence of events. The more regular the events, the more easily these expectations will be formed. So, assessing this Routemap box requires careful thought to ensure that alternate presentations of the stimulus are as predictable as possible in their timing. The physical distance between the two presentations of the stimulus also needs specific consideration. The learner should be able to make a reliable movement but the response must also be detectable by an observer.

Key questions

When considering assessment evidence and how it might relate to particular Routemap boxes in this sequence, the following key questions should be asked.

- How long does the learner attend to any presentation of the stimulus?
- Is there a difference in the duration of their attention on successive presentations?
- Does the learner show signs of anticipating the next presentation?

4 Demonstrates familiarity with recently presented stimulus

Assessment activities/things to try

Present the stimulus to the learner. When the learner stops attending, immediately remove and re-present the stimulus (the gap should be less than three seconds if possible). Use a stopwatch. If the learner attends for a shorter time to the second presentation, it is likely that the learner has remembered the stimulus. (You may need to try this several times to be sure.)

N.B. The stimulus should be neutral (not the face of a familiar adult, not food).

Try using a black and white chequerboard.

Things to look for

Look for:

- a decline in interest when the stimulus is repeated
- recovery of interest when a new stimulus is offered.

Teaching strategies (to move the learner towards this step)

Increase the gaps, looking for evidence of recognition memory (see 'Habituation' on page 30 of *Routes for Learning: Guidance*). Use a variety of stimuli.

Show a new stimulus, rather than the same stimulus again. Look for a recovery of interest.

Distinguishing this step from others

The learner responds to a stimulus by looking or listening intently for a period of time.

When the learner loses interest, the stimulus is briefly removed.

When re-presented, the learner again attends but for less time than previously.

On further re-presentations of the same stimulus, the learner attends less and less, or not at all.

When a new stimulus is presented, the period of interest is much longer.

Examples

During a visual tracking session, Leila was initially interested when the shiny card was presented. When it was taken away and then re-presented her attention span was much shorter and she quickly lost interest.

Meilyr showed an interest in the book as it was 'read' to him, but looked away after about half a minute.

After a short break, the book was presented again but this time he only looked for about ten seconds.

Then the book was replaced with some bells; he was much more responsive to these and sustained his interest for 28 seconds.

14 Anticipates repetitively presented stimulus

Assessment activities/things to try

Try the following with the learner.

- Present a visual stimulus alternately in two different positions.
- Present a single sound in a regular repetitive pulse pattern.
- Place a vibrating brush, massager, etc., on two different parts of the learner's body alternately.

Things to look for

After repeated alternate presentations, look for the learner turning their eyes, head or body part to the next position before the stimulus appears there.

When sound, vibration or light, etc. is presented in a pulse pattern, look for the learner anticipating the next presentation, e.g. the body may stiffen or the eyes widen before the next presentation of a sound.

Teaching strategies (to move the learner towards this step)

If there is no response, try sparkly/twinkly items such as fibre optics, lights or fluorescent rods under ultraviolet light. Blow on alternate sides of the learner's face or blow a raspberry on different parts of body. If the learner has a visual impairment and is slow to develop anticipation, return to Routemap box 12 (Responds differently to different stimuli) and emphasise tactile sense.

Distinguishing this step from others

After the learner has experienced a stimulus being presented first in one location then in another and this pattern has been repeated, the learner's eyes, head or other relevant part of the body move towards the next location in the pattern but before the stimulus appears there.

Examples

The bell was rung behind James, first on the right and then the left, several times in succession. He turned each time towards the side from which it was played. After one re-presentation on the right, I waited and he turned to the left in anticipation. We tried something similar with 'peek-a-boo' birds which emerged alternately from two holes, again on a pause his gaze moved to the next anticipated position.

Martha can anticipate the next location of a light or sound stimulus when presented in an alternating pattern. When I stood behind her on the trampoline and leaned down first to one side and then the other, she turned in anticipation of the direction I would next appear from.

Theme 4: Signalling preferences

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate when they are offered opportunities to continue, repeat or discontinue social interactions.

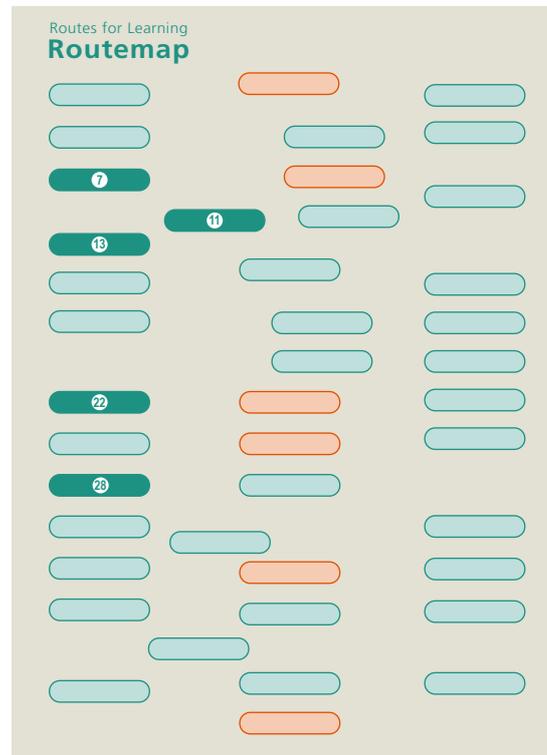
All behaviour 'signals' something to an observer. When a learner makes a voluntary action (e.g. their eyes widen when they are rocked), a good communication partner attributes meaning to it (e.g. 'it looks like they're enjoying it') and responds accordingly – even though the learner may not yet know that their action will affect the behaviour of another person. Being treated as a 'communicator' in this way encourages learners to act with more confidence and ultimately to direct their actions towards a communication partner.

Therefore, as learners progress, we would expect their behaviours to become increasingly purposeful, as well as more easily understood and interpreted by people who know them less well. This progression is described in more detail in the *Routes for Learning: Guidance* (see 'The communication process' on pages 47–52).

Assessing learners' signalling preferences

Throughout this theme and in Theme 7 (Being sociable), social routines provide a consistent framework. They are characterised by a face-to-face context, close physical proximity and a turn-taking structure which incorporates vocalisations, facial expressions, gaze, touch and gestures. Actions may be coordinated with the words of a simple song or rhyme and there is a recurring, cyclical structure. All of these features help to provide a highly supportive context for assessing learners' communicative behaviours.

This structure can be seen in Routemap box 7 (Supported 1:1 turn-taking with adult) where the role of the communication partner is to leave a space for the learner (their turn), then to respond positively to any voluntary action the learner makes and, if appropriate, to repeat the cycle. Learners may well signal a preference to cease engaging with the person or with a stimulus. Routemap box 11 (Responds to some stimuli in a way that can be interpreted as rejection) and Routemap box 13 (Terminates interaction with adult) illustrate different behaviours which partners might interpret in this way.



It is helpful to video assessment activities to pick up subtle behaviours. People who know the learner well are likely to recognise some of the ways they respond to particular experiences or stimuli in specific contexts. Watching the video with family members, members of the class team and health professionals (especially your speech and language therapist) will offer different perspectives. You can then discuss what you observe to reach a shared understanding.

By Routemap box 22 (Responds in ways that can be interpreted as meaning 'more'), a learner who has had plenty of experience of social routines is able, in a pause, to anticipate what might come next and their action (e.g. jiggling up and down) is therefore more easily interpreted by the communication partner as welcoming a repeat of the action.

In the last box in this theme, Routemap box 28 (Communicates 'more'/'no more' through two different consistent actions), the learner's communication is intentional but 'primitive' (see 'Table 2: Levels in the development of communication' on page 48 of *Routes for Learning: Guidance*). Their behaviour can be interpreted easily within the context.

Key questions

When considering assessment evidence and how it might relate to the particular Routemap boxes in this sequence, the following key questions should be asked.

- What is the role of the communication partner? To what extent have they structured the interaction for the learner to join in?
- Does the learner show differentiated responses to different stimuli? Can people who know the learner tell from their reaction what activities they enjoy, or want more of compared with those they dislike or are rejecting?
- Does the learner have consistent strategies, actions or behaviours that they use on purpose to achieve planned outcomes, such as getting more of something they want?

7 Supported 1:1 turn-taking with adult

Assessment activities/things to try

Support the learner in a rocking game, e.g. 'Row your boat'.

Support the learner coactively to return/push the ball to an adult, accompanying your actions by 'Ready, steady, go!'

In conversation, take turns – talk animatedly, leave pauses for a 'reply'.

Present/re-present a toy or object (visual/musical/vibrating), taking turns and facilitating the learner to take their turn.

Things to look for

Look for changes in the learner's behaviour, e.g. looking, smiling at the adult, vocalising, especially during a pause.

Teaching strategies (to move the learner towards this step)

Use a member of staff to support the learner in taking turns, e.g. holding the learner, working hand-over-hand, coactively, etc. Leave time for the learner to initiate a response.

Distinguishing this step from others

The learner makes a response after the adult has:

- provided a clear, or even exaggerated, opportunity to take turns
- prompted the learner to respond and have a turn.

The timing of the learner's response can be interpreted as being 'their turn'.

Additionally, the environment has been carefully arranged to support the learner's requirements.

The communication partner is physically close and is present throughout.

Examples

Manon enjoys being swung in a familiar person's arms. The teaching assistant swings her for ten seconds, then pauses, waiting for Manon to laugh. When she does, the teaching assistant says "More?" then swings her again. They repeat this as a turn-taking game.

When I strum the guitar and then leave a pause, Harry will often vocalise during the silence.

11

Responds to some stimuli in a way that can be interpreted as rejection

Assessment activities/things to try

Present a range of stimuli (those not preferred by the learner). Watch for signs from the learner such as turning away, averting the eyes, changing facial expression, movement of arms or legs. To demonstrate this behaviour, the learner must be able to show a positive response to some stimuli.

Things to look for

Look for the learner signalling a desire to stop the activity or interaction, e.g. by turning away, pulling a face or pushing.

Teaching strategies (to move the learner towards this step)

This 'rejection' response is negative and therefore difficult to teach. At first, it may be very subtle. At every opportunity reinforce or 'shape' the behaviour, responding consistently to confirm the meaning.

Distinguishing this step from others

Although they show interest or pleasure in response to other stimuli, the learner's current behaviour is distinctly different.

They now ignore or actively avoid the stimulus and may show signs of unease.

The learner is dependent on a familiar communication partner recognising these responses.

The learner's behaviours are reactions to events and stimuli rather than behaviours intended to affect others.

Examples

During the Affective Communication Assessment, Zayan is given a tiny taste of salad cream. His body tenses, he purses his lips and drops his head. When presented with another small taste he turns away, keeping his lips pursed. In contrast, when presented with a tiny taste of chocolate spread, Zayan seems relaxed. He makes sucking movements with his tongue and keeps oriented towards the adult.

Nia accepts most kinds of food when offered on a spoon, but clamps her mouth shut when presented with a toothbrush.

13 Terminates interaction with adult

Assessment activities/things to try

Watch for this during a range of activities. Extend turn-taking activities and 'model' this behaviour.

Things to look for

Note how the learner 'signals' the end of an interaction, e.g. by turning away or averting the eyes.

Teaching strategies (to move the learner towards this step)

Respond consistently and respect this signal or the learner may try more extreme measures.

Distinguishing this step from others

During a familiar routine or interaction, the learner can be understood to be stopping their engagement with the other person.

The learner may continue to engage with an object or activity, but withdraws from the interaction.

Examples

Jill seems happy listening to her favourite music. For the first few minutes she smiles while her hand is stroked in time to the music. She then pulls her hand away and shuts her eyes.

Leo closes his eyes if he has had enough of an adult talking to him. He will bring his hands to his face and leave them there as if blocking out the adult.

22

Responds in ways that can be interpreted as meaning 'more'

Assessment activities/things to try

Engage the learner in an enjoyable activity. Break the activity at a critical point, pause, and await the learner's response. For example:

- during eating, pause, holding the food in front of mouth
- during singing, pause in an action song
- pause while beating on a resonance board.

Things to look for

Look for the learner vocalising/moving/changing facial expression, for example:

- widening their eyes, staring at an object
- moving their arms
- opening their mouth or vocalising
- reaching towards an object, in a way which may be interpreted as a request for more.

Teaching strategies (to move the learner towards this step)

Using stimuli to which the learner has a consistent response, build up a pattern. Pause within the pattern and interpret the learner's next response as a request for more. For example, while offering food on a spoon, pause just before putting the spoon in the mouth and interpret the learner's next response (e.g. lips opening) as 'more'. Extend the distance of the spoon from the mouth. Lips closing could mean 'no more'.

Pause during bouncing or a resonance board activity with an action song. Interpret body movement or a facial expression as a request for more.

Distinguishing this step from others

While engaged in an interaction with a partner, the learner makes a response which can be interpreted as 'I like that action or stimulus and will accept more of it'.

The response occurs during a pause (their 'turn').

The learner may not be intentionally affecting the communication partner's actions, but a sensitive communication partner can understand/interpret their behaviour.

The 'more' responses are likely to depend on the type of stimulus (e.g. smell, action, taste, sound, smell, texture), but do not rely on a familiar context.

Examples

Sophie is working with the physiotherapist. She is enjoying reaching out to hit an electronic keyboard. When the therapist turns away to write herself a note, Sophie waves her hands towards the keyboard, frowning.

If Isaac is giving a staff member a cuddle and they pull away, he will reach out and pull them back in for more cuddles. When a snack is gone, he will bang the table until he is given more.

28

Communicates 'more'/'no more' through two different consistent actions

Assessment activities/things to try

Observe the learner's reactions to a less preferred activity or food, etc. Note the actions which may indicate 'no more'. This should be distinct from the action(s) used to indicate 'more'.

Things to look for

Look for a response which may indicate 'no more', e.g. eyes closing, turning away, closing of the mouth. Reinforce and build upon this, responding consistently on every occasion.

Teaching strategies (to move the learner towards this step)

Note even a slight response or change in expression to an activity which the learner wishes to end. Reinforce and shape this behaviour by saying or coactively signing 'finished/no more' and clearly finishing the activity.

Distinguishing this step from others

While engaged in an interaction with a partner, the learner displays two distinct kinds of response:

- responses which can be interpreted as 'I like that and will accept more of it'
- other responses which can be understood as 'I don't like that' or 'I don't want more of that'.

Such responses are used quite consistently in different contexts and often occur during a pause in an interaction (the learner's turn).

The learner's preferences can be understood by unfamiliar communication partners.

Examples

We know Mira wants 'more' because she uses sustained eye contact, smiles and reaches out. We know she means 'no more' when she turns away, refuses eye contact or pushes us away.

It is usually clear from Jake's facial expression that he wants 'more' and he will sometimes vocalise at the same time. However, when he's had enough he will close his eyes while someone is talking and if they don't stop he will turn his face away.

Theme 5: Keeping track of objects

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate when they encounter stimuli which move or go out of sight.

When an object moves along a predictable path, learners have the opportunity to notice that:

- the object's identity is maintained, regardless of location
- its location can sometimes be anticipated
- the object retains its identity and is 'somewhere' even when it is partially or fully hidden from view.

Assessing learners' tracking objects

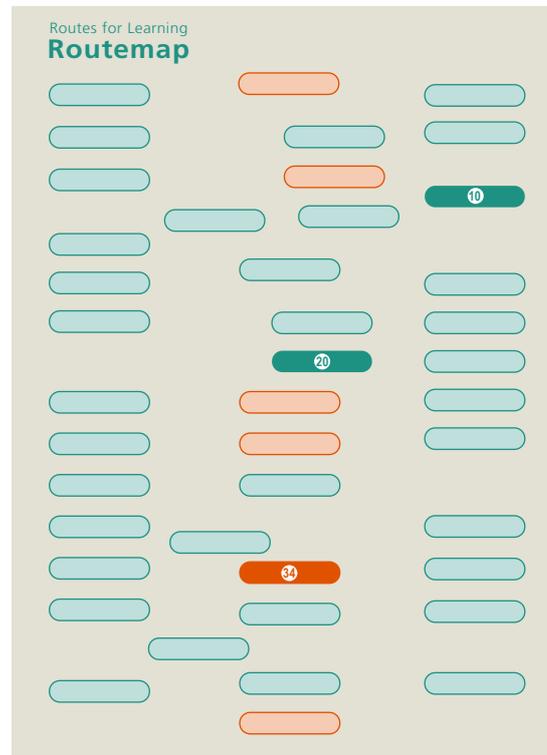
There are close links between this theme and Theme 8 (Changing focus). However, in this theme, the learner's focus is always directed towards a single stimulus as it moves, is partially obscured or disappears.

Initially (Routemap box 10 (Briefly follows moving stimulus)), the object may need to be visually attractive and the background bland and featureless but learners will also need experience of following more 'everyday' objects and in circumstances where the contrast with the background is not so stark. Advice should be sought where appropriate from a specialist teacher for the visually impaired.

Objects should be moved as predictably as possible and at a slow pace. Learners can be 'prepared' for Routemap box 20 (Looks briefly after object disappearing from their field of vision) if, when changing from one object to another and at the end of any session, the object's trajectory ends by moving smoothly into a container which is visible to the learner.

When teaching 'Object permanence' (Routemap milestone 34 (Object permanence)), learners need to experience objects being partially covered, or covered fully, with semi-transparent materials. They should also be given opportunities to engage through touch, e.g. by feeling the shape of objects wrapped in different materials.

For more information about 'object permanence' see page 35 of *Routes for Learning: Guidance*, and pages 36–41 of the same document ('Barriers to learning') for more information regarding the impact of a visual impairment. Note that, if the learner has a significant visual impairment, object permanence may not appear until learners are achieving boxes further down the Routemap.



Key questions

When considering assessment evidence and how it might relate to particular Routemap boxes in this sequence, the following key questions should be asked.

- Does the learner move their eyes in the same direction as the moving stimulus?
- Does their gaze remain on the location of the stimulus when it disappears?
- Does the learner search for the stimulus when it is no longer visible?

10 Briefly follows moving stimulus

Assessment activities/things to try

Try using sound to attract attention, then move to a visual stimulus, e.g. brightly coloured or fluorescent objects. Move the stimulus vertically as well as horizontally and in both directions.

Things to look for

Look for the learner following a stimulus with their eyes.

Teaching strategies (to move the learner towards this step)

Try using objects with different visual properties, e.g. those with different colours or brightness.

Distinguishing this step from others

The learner's eyes focus on a stimulus.

When the stimulus moves, the learner's eyes move in the same direction.

They can follow a stimulus in more than one direction.

'Following' may be brief and might be jerky and incomplete (moving from position to position). 'Tracking' more smoothly develops from this.

Examples

Efan moves his head in little jerks to follow the gold bag or the coloured day of the week card as they are moved from left to right and from right to left.

While Ella was pushed around school in her wheelchair, she looked up further and further to the left as we passed the windows where natural light comes in.

20

Looks briefly after object disappearing from their field of vision

Assessment activities/things to try

When the learner is focused on an attractive object, move it slowly and deliberately out of sight and watch for any reaction.

Things to look for

Look for the learner looking after the object as it disappears.

Teaching strategies (to move the learner towards this step)

Use a variety of situations or places to encourage the learner to 'look after' an object which has disappeared from view.

Distinguishing this step from others

The learner's eyes focus on a stimulus. When the stimulus moves, the learner's eyes move in the same direction.

When their gaze reaches the point at which the object disappears from view, they continue to look there for a very brief period following the object's disappearance.

Examples

When Connor's dad said goodbye to him and walked out of the classroom, Connor followed with his eyes and stared momentarily at the door when the door closed.

Emma was playing with a small cuddly dog toy from a story sack when the teaching assistant removed it from her tray and returned it to the sack (which was on the floor). Her gaze followed the toy and she continued briefly to look at the sack into which it had disappeared.

34 Object permanence

Assessment activities/things to try

Engage the learner's attention with a shiny, noisy or furry object. Then, either move the item out of sight, keep it quiet or move it just out of reach. Does the learner 'search' for the item?

Things to look for

Look for the learner:

- looking towards the point of disappearance for a brief time
- stilling, turning their head or changing their facial expression when a noise stops
- searching briefly by feeling on a tray for an item removed from their grasp
- searching more actively or for a longer duration.

Teaching strategies (to move the learner towards this step)

If there is no response to the object being removed from the field of attention:

- try partially covering the object, or use a see-through cloth
- use a moving object under the cloth.

Ensure that the learner's attention is focused on the place from where the object disappeared (e.g. make a noise with it from just outside the learner's field of vision), then bring the object back into sight for a short time from this direction.

Prompt the learner's hand to reach for the object in the direction in which it was moved away.

Distinguishing this step from others

The learner focuses on a stimulus.

If the stimulus moves, the learner's eyes follow it to the point where it disappears from view and continue to look there afterwards.

If the stimulus does not move but is covered over, the learner's gaze remains fixed on, or returns to, the place where they last saw it before it was obscured.

They 'search' for the stimulus visually, through touch, or by listening more intently in its direction.

Examples

When an adult stands directly in front of Abi and hides a favourite toy behind their back, she will pull on them to try and turn them around or stretch her arm out towards where it is hidden.

Rhys actively looked for his drink bottle, pulling the lid off a box after watching it being placed inside. He also pulled aside a screen behind which his toy car had been hidden.

Theme 6: Acting on the physical environment

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate as they interact with environments and the materials and objects within them.

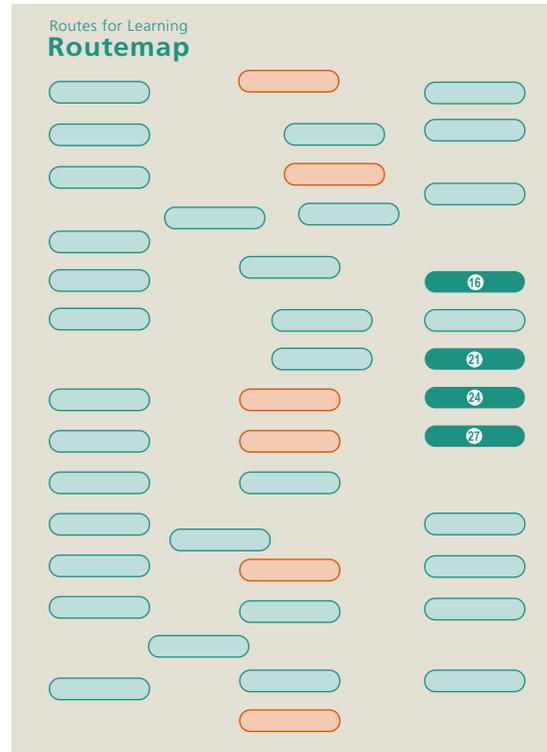
In Theme 1 (Responding to stimuli), assessment was tightly focused on a learner's responses to stimuli. These were specifically selected and presented to them. This theme, however, is concerned with the way learners begin to connect with what is around them and increasingly through actions of their own. This theme is closely linked to Theme 9 (Connecting actions with outcomes) and reaching the higher steps here implies a developing awareness of cause and effect.

Since the focus is primarily on the physical environment (rather than people) the Routemap boxes in this theme are located on the right-hand side of the Routemap. Nonetheless, the practitioner has a critical role in providing appropriate support and making adjustments.

It is important when gathering evidence for this theme to observe learners interacting within a wide range of environments, both indoors and in the open air.

Assessing learners in relation to environments and materials

When adapted to the maximum degree an environment might be described as 'prosthetic', (i.e. entirely contrived to support the learner and therefore very unlike what might be found in 'real life'). 'Reactive' environments, surfaces, materials and objects are those which are designed to provide exaggerated effects for minimal effort. 'Everyday' environments are those which provide responses that are not artificially 'enhanced' in this way. It is important to consider these factors when assessing learners in relation to this theme.



It is essential to ensure that learners working on the Routemap boxes in this theme experience the best possible chance of connecting any action of their own with a specific outcome. This may require particular consideration in multi-sensory environments (e.g. white rooms or sensory floors). If other learners are present, this will be confusing and if they are also creating effects, learning is unlikely to occur.

Key questions

When considering assessment evidence and how it might relate to particular Routemap boxes in this sequence, the following key questions should be asked.

- To what extent has the environment been adapted or manipulated in order to reduce the demands on the learner?
- To what extent do the learner's actions depend upon the mediation of another person (e.g. the teacher, teaching assistant or family member)?
- To what extent is there evidence of active intention and purpose in the learner's interactions?

16 With support explores immediate environment

Assessment activities/things to try

Place the learner's hand on an interesting object and assist them to feel it, then pause.

Things to look for

Look for the learner:

- moving their fingers or hand
- smelling or trying to lick or mouth objects
- actively exploring objects in turn.

Teaching strategies (to move the learner towards this step)

Place the learner's hand or foot in warm water; agitate the water.
 Pour sand over the learner's hand or foot.
 Bury the learner's foot in sand, shaving foam, jelly or slime.
 Use a ball pool, feely bags, etc.

Distinguishing this step from others

The learner demonstrates a response provided that:

- the environment has been carefully arranged to support their requirements
- an adult is physically close and is present throughout
- the adult has initiated the interaction by (at least):
 - bringing the material to the learner
 - bringing the learner's hand, foot, etc. to the material.

Examples

Kayleigh laughed as sand was sprinkled over her feet; she then moved her feet in the sand.
 Peter coactively felt a feather boa during our story and continued to hold on to it.

21

In a reactive environment repeats action which obtains sensory feedback

Assessment activities/things to try

Place the learner on an interesting reactive surface and note the response.

Things to look for

Look for the learner making attempts to create an action or effect.

Teaching strategies (to move the learner towards this step)

Use physical or verbal prompts to initiate exploration, then reduce the frequency of the prompts. Draw the learner's attention to the effects created.

Distinguishing this step from others

The learner makes something happen more than once provided that the:

- environment has been carefully arranged for them to do so
- materials involved (are designed to) provide strong sensory effect(s).

The learner shows clear interest in the effect(s) produced.

The adult does not need to be continuously present and does not provide physical support to enable the action(s) to happen.

Examples

Owen will eagerly bash the resonance board to create a range of sounds. When placed on a noisy space blanket, he wriggles and kicks enthusiastically.

Sarah will explore sensory materials placed very near her, such as beads that sparkle under lights. She will also use her hand to make sounds on the chimes and pulls fibre optics closer to her.

24

In an everyday environment repeats action which obtains sensory feedback

Assessment activities/things to try	Distinguishing this step from others
Try a range of everyday play activities (e.g. sand, water) which require the learner to interact repeatedly to gain an effect.	The learner makes something happen more than once.
Things to look for	The materials involved are not specifically designed to provide strong sensory effect(s).
Look for the learner deliberately making things happen in an everyday environment.	The learner shows clear interest in the effect(s) produced.
Teaching strategies (to move the learner towards this step)	The adult does not need to be continuously present and does not provide physical support to enable the action(s) to happen.
Use a range of preferred objects or activities and use prompts to initiate exploration. Reduce any prompts over time.	

Examples
Lily will place her hands into the water tray and splash about; she also enjoys doing this in the pool. Gareth picked up a string of beads from a tray of materials. He looked closely at them while moving them about in front of his eyes.

27

Begins to explore immediate environment with intent

Assessment activities/things to try

Observe reactions to a less familiar environment, when accompanied by a familiar adult.

Things to look for

Look for any form of exploration, e.g. the learner looking around, reaching out, or a body movement if on the floor.

Teaching strategies (to move the learner towards this step)

Provide interesting visual/tactile experiences in a controlled way by regularly introducing new stimuli and drawing attention to them.

Distinguishing this step from others

The learner engages with a nearby object or materials, or their immediate surroundings.

The learner shows clear interest and focus.

The learner's actions are directed towards this focus.

The environment and materials are not specifically designed to provide strong sensory effect(s) and might be ones that are not regularly encountered by the learner.

Although the adult may be present, the learner's actions are not dependent upon those of the adult.

Examples

When we were in a different classroom, Zoe rolled on the floor to get near to the doll's house.

If Nicholas hears that some object has been placed on his wheelchair tray, he will first search for it using his hands and then, if it is something he likes or wants, he will spend time exploring it.

Theme 7: Being sociable

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate when they participate in social routines with another person.

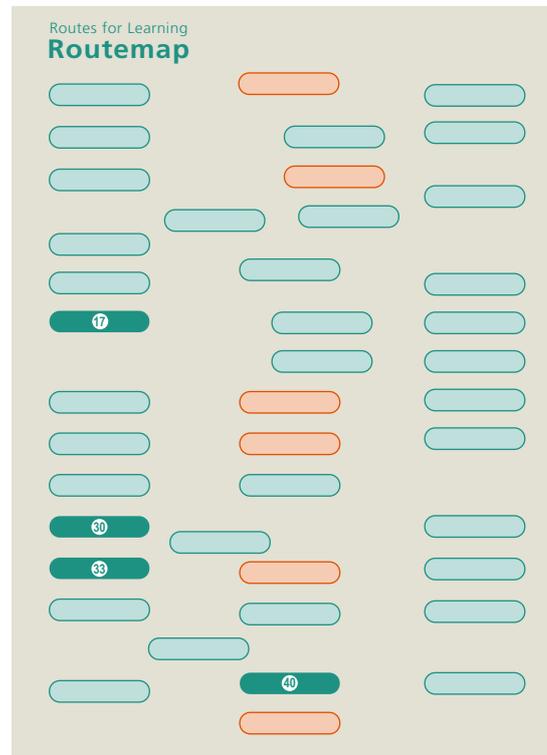
Social routines, as described in Theme 4 (Signalling preferences), are very flexible vehicles for learning. They may have no specific goal other than sharing an experience with another human being (as in an 'Intensive Interaction' session) but can also be used to assess specific behaviours, and can incorporate objects and events to varying degrees. As opportunities for assessment and for teaching they are highly adaptable and capable of reflecting contexts drawn from diverse areas of the curriculum.

Assessing learners 'being social'

It is very important that routines are consistent so that both learners and communication partners gain experience of what to expect from one another and from the environment. The routine itself should recur frequently (e.g. daily) and should, initially at least, have a predictable repeating structure of 'turns'.

As the learner becomes more familiar with this structure, the communication partner can use exaggerated actions and vocalisations to facilitate the learner's anticipation of recurring high-points in the routine. The first example given below for Routemap box 17 (Anticipates within familiar social routines) illustrates the way an object and an event are used to encourage anticipation within a social routine.

In Routemap box 17 (Anticipates within familiar social routines), as elsewhere in the upper part of the Routemap, the communication partner controls many aspects of the routine, minimising the demands placed on the learner. This helps the learner to become aware of the pattern of the exchange, to monitor the actions of the communication partner and to make responses during the gaps left for their 'turn'.



Later in the Routemap, the 'dynamic' of the routine changes as the learner becomes more proactive and the communication partner more selective in responding to the learner's actions. This can be clearly seen in Routemap box 30 (In the context of a familiar social game, perseveres by repeating action in order to get reward) where the partner's failure to respond in a well-established routine is noticed by the learner and leads them to repeat the action to keep the routine going. By Routemap box 33 (Initiates social game), the learner takes even greater control in the routine by initiating a game.

Routemap box 40 (Joint attention) occurs when the learner and the communication partner share interest in an object or event and also share an understanding that they are both interested in it. It is not a request to obtain an object but rather the sharing of pleasure or interest in something.

Joint attention is a complex behaviour arising from the learner's repeated experience of social routines (as described above) and is also built on their ability to disengage and re-engage attention with objects and events (see 'Theme 8: Changing focus'). Learners may be observed to:

- respond to joint attention – where, during a social routine, the learner observes the communication partner's focus on an object (e.g. a toy or a book) and responds by picking it up and showing it to the partner, or looks at it and then looks and smiles at the partner
- initiate joint attention – where it is the learner who actively draws the communication partner's attention to an object or event and ensures that the shared interest is then jointly acknowledged; learners with PMLD may have greater difficulty when initiating joint attention as a result of physical disabilities or poor motor control.

Key questions

When considering assessment evidence and how it might relate to the particular Routemap boxes in this sequence, the following key questions should be asked.

- How much does the communication partner have to structure the interactions in order to support the engagement of the learner?
- How dependent is the learner on their familiarity with the routine? (Does the game have to be carried out in exactly the same way or can there be some variation?)
- Can less familiar partners engage the learner in social games?

17 Anticipates within familiar social routines

Assessment activities/things to try

Within a familiar routine (e.g. 'drinks', personal hygiene, social games), pause before the climax.

Things to look for

Look for signs of anticipation, e.g. stiffening or movement of the whole body, an increase in eye contact, smiling or laughing.

Teaching strategies (to move the learner towards this step)

Ensure that consistent routines are used for personal hygiene, drinks, etc. Cue or exaggerate a particular part of the routine to turn it into a game, e.g. when changing the learner, develop a game around the need to lift their bottom off a bench. This could involve the cue of an exaggerated intake of breath as the learner's bottom is raised, a dramatic pause in the action, and culminates in repeated bouncing. Try regular and frequent games such as those based on nursery rhymes or other personally devised games.

Distinguishing this step from others

Just before the climax of a routine, the learner's excitement and their engagement with it can be seen to increase markedly.

The learner is dependent on a narrow set of familiar routines and on the skills of a sensitive communication partner who knows the learner well, presents well-timed opportunities, and facilitates and recognises the learner's responses.

Examples

I paused before offering Katie the final mouthful of food, using a big movement and saying 'Here it comes!'. I lifted the spoon from the plate, stopping the spoon 'mid-flight' just before it reached her mouth. Katie increased her body movements slightly and, in response, I offered her the last spoonful.

Nathan opens his eyes and mouth wide and smiles when I exaggerate moving my arms towards him prior to tickling.

30

In the context of a familiar social game, perseveres by repeating action in order to get reward

Assessment activities/things to try

Try pausing in an established routine. When the learner signals that they would like 'more' (as in Routemap box 22 (Responds in ways that can be interpreted as meaning 'more')), continue to delay the response.

Things to look for

Look for the learner repeating a request for more, despite a delay.

Teaching strategies (to move the learner towards this step)

Use an established routine in a social game, pause, and then wait for the learner to repeat the action. Lengthen the delay, encouraging the learner to persevere.

Distinguishing this step from others

During a pause in a social game, the learner shows the communication partner that they would like 'more' of the activity.

The learner repeats their own action when the partner fails to respond.

The learner is not dependent on the communication partner to interpret their attempt to participate (the learner is proactive).

This response from the learner is only seen within a narrow set of social games or routines.

Examples

I paused just before the end of a game of 'Round and round the garden' and then Anil lifted his right arm up and down repeatedly, vocalising loudly when we continued the game.

When she is on the swing, if the swing stops, Lucy will repeatedly rock, vocalise and make eye contact with the adult until they respond by pushing again.

33 Initiates social game

Assessment activities/things to try

Building on Routemap box 30 (In the context of a familiar social game, perseveres by repeating action in order to get reward), approach the learner and wait for him/her to initiate a game.

Things to look for

Look for the learner attempting to initiate a game, e.g. by reaching out for the adult or by other means.

Teaching strategies (to move the learner towards this step)

See the information regarding Routemap box 30 (In the context of a familiar social game, perseveres by repeating action in order to get reward) on page 43 of this assessment booklet. Prompt the learner to initiate a game and respond to this, e.g. the learner knocks a toy off the table and then attracts attention to get it back.

Distinguishing this step from others

The learner makes attempts to initiate a social game or routine. Their actions go beyond simply continuing an existing game or responding to an opportunity that arises.

The learner needs the support of a familiar routine and/or the learner needs support from familiar communication partners who are attentive and able to recognise initiations.

Examples

If anything is left near enough to her, Poppi will pick it up and drop it on the floor, if it is replaced by a member of staff, she laughs and drops it on the floor again.

During the afternoon break, Dylan looked at me and held out his palm for a game of 'Round and round the garden' which we had played together earlier in the day.

40 Joint attention

Assessment activities/things to try

Set up a novel or interesting stimulus reasonably close (but out of reach) and wait to see if the learner switches/alternates their gaze between the object and the communication partner.

The learner should join the adult in attending to a stimulus, confirming the attention of the adult visually throughout.

Stroke a dog. Does the learner also touch the dog and smile at the adult?

Point to an item in the near distance. Does the learner look towards the item then back at the adult?

Things to look for

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.

Look for the learner showing pleasure in sharing, or trying to 'comment' on the item.

Teaching strategies (to move the learner towards this step)

Teach joint attention by prompting the learner (verbally or with touch) to look at, listen to, or feel an item of adult choice, then to attend to the adult and the item in turn.

Take the opportunity to share a stimulus to which the learner is attending. Encourage attention to the stimulus and then the adult in turn. This is key for all future communication.

Distinguishing this step from others

The learner:

- fixes their gaze on an object, disengages their gaze from the object, then shifts their gaze to the partner's face

and/or

- fixes their gaze on the partner's face, disengages their gaze from the face, shifts their gaze to an object.

This step corresponds to Level II of the eyePoint Scale (Shifts gaze to face)⁷.

Within familiar contexts, the learner responds to and initiates joint attention without the support of a familiar social routine.

Examples

While sharing a story book with an adult, Olivia looked up at intervals and smiled at the adult, before looking back to the book.

When playing on the plasma screen, Daniel looked at the effect his actions had caused, then looked at me and smiled.

⁷ University College London and Great Ormond Street Hospital. *Eye-Pointing Classification Scale*.
Website: www.ucl.ac.uk/gaze

Theme 8: Changing focus

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate as they shift their attention between objects and events.

There are close links between this theme and Theme 5 (Keeping track of objects). However, in this theme the learner's focus moves between different stimuli.

Assessing learners' changing focus

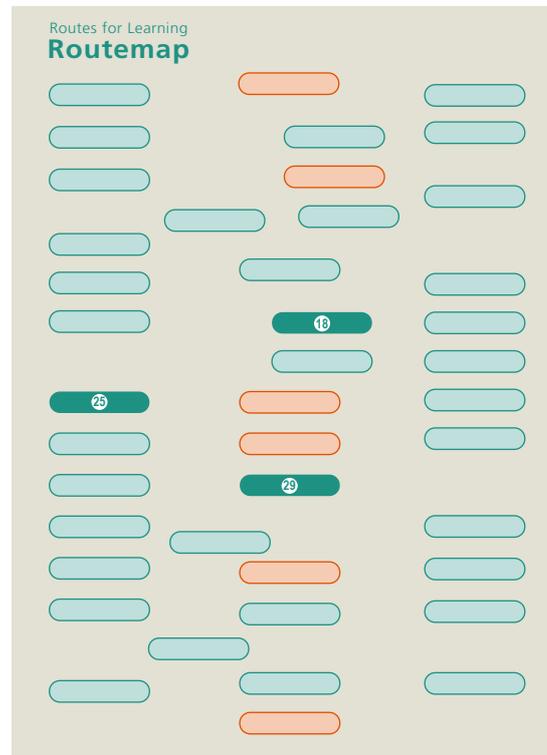
All of the behaviours represented in this theme require the learner to 'disengage' their attention from the initial focus of their interest.

The first skill to emerge is an ability to switch attention from one visual target to another when the first target disappears. Later, learners become able to shift their attention more flexibly even when two objects are visible at the same time. The developing ability to disengage in this way and to re-engage attention on another object or event in a different location are aspects of a sub-system of attention described as 'attention control' or 'executive function'.

As a learner progresses through the Routemap boxes in this theme, they will become better able to inhibit the automatic responses that previously governed their attention. As a result, they can begin to exercise more control over what they attend to (see 'Theme 3: Responding to pattern in repetition' for information about other aspects of attention).

Although the description above emphasises the visual modality, touch, taste, smell and hearing are just as important and often operate together. For instance, a learner may pick up an object, manipulate it, bringing it to their mouth to examine it, before discarding it in favour of a different stimulus.

The fact that 'novelty' continues to be a significant factor in what governs attention is demonstrated by Routemap box 25 (Changes behaviour in response to interesting event nearby) – the learner can now disengage from their current activity in order to focus on something new and more 'interesting'. Such unplanned events occur spontaneously in all aspects of life, including in school, and provide excellent assessment opportunities. This underlines the importance of retaining some flexibility when planning.



By Routemap box 29 ('Looks' backwards and forwards between two objects (knows two objects are present)), the learner is able to demonstrate the ability to disengage from more than one object when objects are presented together. The ability to switch attention back and forth between objects is a prerequisite for more accurate comparison and for making informed choices.

Key questions

When considering assessment evidence and how it might relate to particular Routemap boxes in this sequence, the following key questions should be asked.

- Does the learner look from an object to another object or event in a different location?
- Can the learner attend sequentially one item/event (on its own) then another?
- Can the learner attend alternately to two objects or events both present together?

18 Redirects attention to a second object

Assessment activities/things to try

While the learner is attending to an object, offer a second interesting item to encourage redirection of their attention.

Things to look for

Look for the learner losing interest in the first object and focusing attention on a new item.

Teaching strategies (to move the learner towards this step)

Try prompting visual or tactile exploration of a second object, allowing time for the re-focus of attention.

Distinguishing this step from others

The learner looks at/grasps/begins to explore a new object after it is introduced.

Only one object is present (initially).

In relation to the learner's 'looking' behaviour, this step corresponds to Level III of the eyePoint Scale (Fixes, disengages and shifts gaze)⁸.

N.B. This shift of attention is not the same as making a choice.

Examples

When a musical instrument is offered to her, Nahid will look at and reach for it. If a second instrument is then introduced, she will drop the first and reach for the new one.

When an item of food is on the table, Matthew will reach for it, but if his drink bottle is then put in view, he will reach for that instead.

⁸ University College London and Great Ormond Street Hospital. *Eye-Pointing Classification Scale*.
Website: www.ucl.ac.uk/gaze

25

Changes behaviour in response to interesting event nearby

Assessment activities/things to try

Introduce a second toy/stimulus/adult/peer nearby while the learner is engaged in an activity.

Things to look for

Look for the learner 'noticing' a second event/stimulus and reacting or changing behaviour, e.g. by turning, attending or vocalising.

Teaching strategies (to move the learner towards this step)

Introduce a second activity, e.g. an adult or peer entering the room. Draw the learner's attention to it.

Distinguishing this step from others

The learner's attention moves to a new event when it occurs.

This may be a temporary distraction – the learner may either return to their previous activity or else forget about it – depending on how interesting the event is.

Examples

During circle time, a member of staff from another class came into the room in fancy dress playing the guitar. Caleb turned to look and listen.

If someone enters the room when Hannah is using the computer she ignores the computer and focuses on the interruption.

29

'Looks' backwards and forwards between two objects (knows two objects are present)

Assessment activities/things to try

Place two attractive objects on the learner's tray to be explored visually or by touch; bring both to the learner's attention and wait.

Things to look for

Look for the learner attending to, or feeling, each of the two objects in turn and redirecting their attention.

Teaching strategies (to move the learner towards this step)

Try prompting exploration of each object in turn, allowing time to re-focus attention. Both objects need to be in the learner's visual/spatial field.

Encourage the learner to explore both objects, rather than to 'choose' one of them.

Distinguishing this step from others

The learner explores one object then explores the second object.

The learner continues to show some degree of interest in both objects, giving attention to each at different times.

Two objects are present throughout.

N.B. This alternating attention is not the same as making a choice.

Examples

Elis looked back and forth from the shaker to the bells, twice; he seemed to be more interested in the bells. In the sensory cave, Laura reached for the chimes, the baubles and again the chimes.

Theme 9: Connecting actions with outcomes

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate when they begin to see the significance of their actions in relation to the effects they produce.

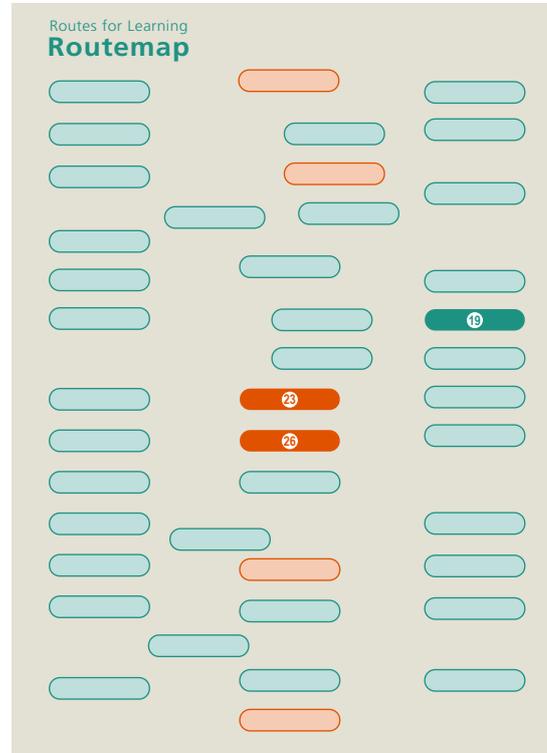
There are close links between this theme and Theme 6 (Acting on the physical environment).

Assessing learners connecting actions with outcomes

It is essential to ensure that learners working on the Routemap boxes in this theme experience the best possible chance of connecting any action of their own with a specific outcome. This may require particular consideration in multi-sensory environments (such as white rooms or sensory floors). If other learners are present and are also creating effects, this will be confusing and learning is unlikely to occur.

Routemap box 19 (Accidental actions cause effect) refers to the learner making 'accidental' or random actions, but for assessment and teaching, all aspects of the learning environment need to be carefully planned.

- The learner's most reliable action(s) should be identified (based on information gathered when assessing earlier themes); everything should then be designed around that.
- Any object involved may need to be very specifically placed – close to the 'end-point' of the learner's identified action. To achieve this, a 'little room' may need to be set up to allow the object to be suspended above them in just the right position.
- The chosen object must be able to create a reliable effect each time the learner's 'action' connects with it.
- The effect needs to be one that will keep the learner's interest over multiple trials (see 'habituation' in 'Theme 3: Responding to pattern in repetition').



- The effect must stop immediately, or very shortly after, the learner's action ceases. The learner needs to be able to remember what they 'did': thus hearing a tune play to its conclusion may not be very effective. Careful observation will establish how long it takes for the learner to 'notice' that something has happened. The length of the effect should then be adjusted accordingly. A shorter effect allows greater opportunity for repetition and for the learner to experience success.

The *Routes for Learning: Guidance* provides further information relating to this theme and a clear explanation of the distinction between Routemap milestone 23 (Responds to cause and effect) and Routemap milestone 26 (Shows understanding that their action causes a specific effect) (see pages 34–35).

Although learners' intentional actions are perhaps most clearly observed when they use switches and other forms of technology, it is important to look in other contexts and especially to consider how learners come to understand that their actions can achieve outcomes with people.

Key questions

When considering assessment evidence and how it might relate to particular Routemap boxes in this sequence, the following key questions should be asked.

- Does the learner succeed in producing an outcome by chance alone or does their action show some consistency and accuracy?
- How frequently do they repeat their action?
- How well-timed are their actions in relation to the outcome?
- Does the learner respond to their own success? If so, how?

19 Accidental actions cause effect

Assessment activities/things to try

Place the learner on a reactive surface, e.g. a space blanket or resonance board.

Things to look for

Look for:

- independent (but random) movement of hands or fingers
- active exploration by the mouth or other parts of the body
- the learner's reaction to any 'effects' created.

Teaching strategies (to move the learner towards this step)

Use a range of surfaces or toys which react to touch (e.g. a survival blanket, an interactive floor mat, a sound beam, a Bobo doll). You could also use a 'little room'. Provide opportunities for the learner to have an effect 'by chance' on the immediate environment (e.g. knocking a noisy toy). Reinforce these actions, prompting a repeat and ensuring a consistent result.

Distinguishing this step from others

The learner makes something happen close to them provided that the:

- environment has been carefully arranged so that a movement within the learner's repertoire encounters the target material(s)
- materials produce strong sensory effect(s) which are not obviously ignored or disliked by the learner.

The adult does not need to be continuously present and does not provide physical support to enable the action(s) to happen.

Examples

Anwen moved her feet when the space blanket was placed underneath them. The noise seemed to interest her.

Li rolled about on the musical mat in the light room causing the music to play.

23 Responds to cause and effect

Assessment activities/things to try

Using an action which you have established that the learner can do (e.g. kicking, pressing a switch), use a reward and observe the rate of response.

Things to look for

Look for:

- the learner making something happen independently
- the rate of action increasing when it has an effect, e.g. kicking increases when it causes a mobile to move
- whether or not the learner waits for a reward to finish before pressing a switch again.

Teaching strategies (to move the learner towards this step)

At this stage the learner may not fully understand the connection between their action and the outcome. Ensure the action obtains a consistent result to help the learner establish this link.

A particularly effective technique may be to attach a string to the learner's ankle enabling them to move a mobile – the more the learner kicks, the more the mobile moves. This technique ensures that the learner receives good feedback.

Distinguishing this step from others

The learner acts successfully to make something happen (the reward).

They demonstrate some degree of interest in the reward.

After experiencing success, they keep repeating the action.

Their actions do not seem to be timed to coincide with the reward ending and may be just as frequent while the reward is still happening.

Examples

Martina knew that she had to press the touchscreen to make something happen and did so repetitively. She continued to do so all the time the reward was playing.

Jordan swipes the chimes repeatedly, without waiting for the sound he's created to die away first.

26

Shows understanding that their action causes a specific effect

Assessment activities/things to try

Provide a switch for a toy or provide a wobbly toy, wind chimes, etc., which can be operated by an action that the learner has already acquired.

Things to look for

Look for the learner acting with intent and more consistently, for example:

- waiting for a reward to end before trying again, linking a particular action with its consequence
- a change in facial expression or concentration
- increasing accuracy.

Teaching strategies (to move the learner towards this step)

Encourage the same action to obtain a variety of effects. Ensure that every repeat of the action is successful.

Distinguishing this step from others

The learner acts purposefully to make something happen.

This action is not repeated while the reward operates.

They attend closely to the reward and may show pleasure and excitement.

They repeat their action only when the reward has finished.

Examples

Sam will press a switch to activate a hairdryer or a music player; he smiles when he sees it has been activated and waits. Once it has stopped he will reach out to press again.

Eira hits her drum and then waits and listens as the music teacher plays the same pattern in response. She then hits the drum again.

Theme 10: Acting to engage others

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate when they seek to obtain the attention of another person.

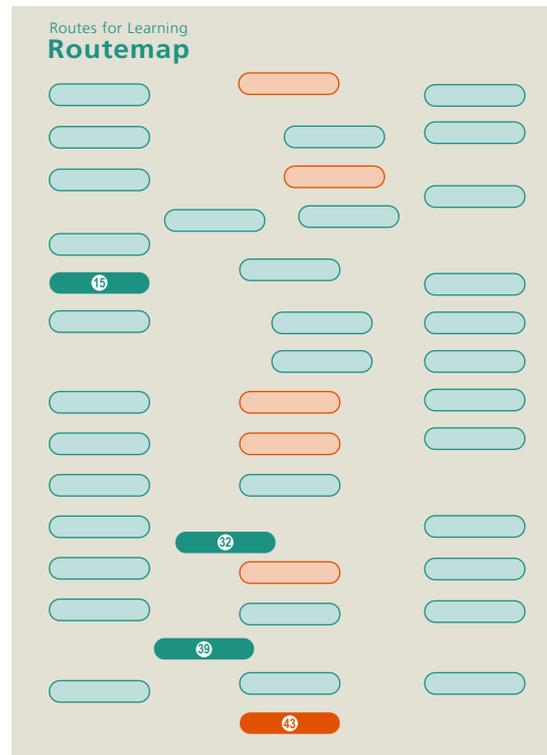
All of the behaviours described here are 'initiations' by the learner which serve to gain or re-gain the attention of communication partners. As learners progress, we would expect these behaviours to become increasingly purposeful and more easily understood and interpreted by people who know the learner less well (see 'The communication process' on pages 47–52 of *Routes for Learning: Guidance* for more detail on this progression).

Assessing learners acting to engage other people

In this theme, as in others, communication partners play a key role by being sensitive to and noticing any attempts learners make to engage their attention. Routemap box 15 (Objects to termination of interaction) represents an early form of gaining attention. The learner's behaviour while it is 'proactive', relies upon and arises within an ongoing routine. It is not yet directed towards (affecting the behaviour of) the partner.

In less-structured situations (e.g. in the times between planned activities, social routines or interactions), particular care is needed to ensure that learners who are not able to use vocal strategies can nonetheless attract the attention of a partner. Such learners may rely on other people to position themselves so that they can see the partner clearly. Similarly, where learners have limited vision and/or hearing, potential communication partners may have to take extra care to ensure that learners know there is a potential communication partner nearby. Individual learners may then begin to attract attention using the particular action(s) over which they have the most reliable control.

Communication partners need to be observant and to respond consistently to any such initiation. At first, they may need to be 'on stand-by' quite close to the learner (Routemap box 32 (Attracts attention)). However, when the learner can consistently gain attention in this way, the communication partner can encourage greater independence and refinement by being further away, attending less vigilantly to the learner and responding only to the learner's clearest initiations (Routemap box 39 (Deliberately attracts attention of another person in order to communicate need)).



Exercising autonomy (Routemap box 43 (Initiates strategies to achieve desired results in a variety of contexts (exercises autonomy))) is a very advanced skill for any learner with PMLD. A learner who has mastered this step is able to initiate actions that require a degree of planning. Effectively they can be seen to apply 'means-end' problem-solving (see 'Theme 11: Solving problems') not only in interactions with the physical environment (when they are physically able to do so) but also within a social interaction. This also implies a degree of awareness of themselves as an 'independent actor' who can affect the behaviour of others. The role of the communication partner is now to facilitate and thereby reinforce the learner's autonomous actions.

Key questions

When considering assessment evidence and how it might relate to the particular Routemap boxes in this sequence, the following key questions should be asked.

- Does the learner attempt to obtain attention at times when no one is interacting with them, or only to restart an existing routine?
- To what extent does the communication partner have to be nearby and actively attentive for the learner to make an initiation?
- Can the learner use their skills to gain the attention of less familiar communication partners?
- To what extent does the learner's attempt to gain attention appear to be structured to achieve a specific communicative goal (e.g. obtaining a particular toy or sharing something they find interesting)?

15 Objects to termination of interaction

Assessment activities/things to try

Break off interaction during the routine; turn away and stop the activity. Note the learner's reaction.

Things to look for

Look for strategies used by the learner which appear to signal that they want the 'exchange' to continue, e.g. by eye movement, body movement or vocalisation.

Teaching strategies (to move the learner towards this step)

Ensure practitioners respond to the signal consistently.

Distinguishing this step from others

When a familiar social routine is stopped, the learner acts in a way which seems to indicate irritation or disappointment.

Their behaviour looks more like a direct reaction to the ending of the exchange, rather than a request to the communication partner to re-commence.

Examples

Alex is taking turns in clapping hands with her teacher. When the teacher turns to answer a colleague, Alex starts to cry.

I was stroking Liam's arm gently. When I paused and withdrew my hand, he began banging the tray in front of him and vocalising loudly.

32 Attracts attention

Assessment activities/things to try

Stay within the learner's sight/hearing but do not interact; wait to see if the learner shouts, waves or cries, etc. This might be a minimal response.

Things to look for

Look for the learner trying to attract the attention of familiar staff nearby.

Teaching strategies (to move the learner towards this step)

Set up situations where familiar staff are nearby, but not interacting. Consistently reinforce attempts by the learner to gain their attention.

Distinguishing this step from others

In the absence of an ongoing social interaction, the learner initiates a request for attention provided that observant, responsive and familiar communication partners are nearby, and ready to respond.

Examples

Dafydd will reach out and pull on an adult's hands or clothes to get attention (provided they are close enough).

If Robyn is in an uncomfortable position in her seating/standing equipment and an adult is close by, she will look towards them and cry out until they come over to her.

39

Deliberately attracts attention of another person in order to communicate need

Assessment activities/things to try

Avoid attending to the learner. Observe the strategies used to gain attention, with no prior intervention. These may include:

- vocalising until an adult appears, then stopping
- pushing items off a tray and then smiling when an adult appears
- stopping activities to press a switch which has consistently been used (with support) to call an adult.

Things to look for

Look for all unprompted attempts to gain adult attention, in particular at times when an adult is not expecting them. Strategies can be taught (e.g. pressing a particular switch which could be present on a tray or chair) but they must come to be used on the learner's terms not just after adult encouragement.

Teaching strategies (to move the learner towards this step)

Choose an action in the learner's repertoire to which an adult can respond consistently by giving attention, for example:

- pressing a switch (left available in same position)
- vocalising above a certain sound level
- moving arms/legs/eyes, etc.

By responding consistently to the action, the adult encourages the learner to carry out the action on future occasions in order to gain adult attention as a reward.

Distinguishing this step from others

In the absence of an ongoing social interaction, the learner initiates a request for attention.

The request can be clearly interpreted even by communication partners:

- who do not know the learner well
- who are not near to the learner at the time
- whose attention is elsewhere.

Examples

When Ryan wants to come out of his chair (or up from the floor), he will vocalise loudly to gain the attention of one of the class team, holding his arms up as he does so.

When Melanie is working on her own (e.g. using the computer) and wants something, she bangs the (metal) side of her wheelchair until someone comes over to speak to her.

43

Initiates strategies to achieve desired results in a variety of contexts (exercises autonomy)

Assessment activities/things to try

Stand or sit in view of the learner, but do not pay attention to them. Does the learner then try to gain your attention? Does the learner then go on to request an item which is out of sight or reach?

Things to look for

Look for:

- attempts to gain adult attention (as above) and make a request, e.g. vocalising for attention and then touching a symbol on a tray
- the learner timing switch-presses to get a desired result in a computer programme.

Teaching strategies (to move the learner towards this step)

Increase the variety of situations where demands are put on the learner to gain attention and make requests. Ensure that responses from adults are quick and consistent. Do not anticipate the learner's wants – create opportunities for communication.

Distinguishing this step from others

The learner both engages a communication partner, using a strategy like vocalising or reaching, **and** draws their attention to something they want.

The learner engages a communication partner **and** conveys that they want the partner to do something such as pick them up or tickle them.

The learner applies these strategies in a variety of contexts.

For learners who rely on eye-pointing, the learner:

- fixes their gaze on an object, disengages their gaze from the object, shifts their gaze and fixes on the partner's face, returns their gaze to fix on the same object
- fixes their gaze on the partner's face, disengages their gaze from the face, shifts their gaze and fixes on the object, returns their gaze to fix on the same partner's face.

This step corresponds to Level I of the eyePoint Scale (Uses Eye-Pointing).⁹

Examples

Jamie vocalised loudly until I stopped what I was doing and came over to him. He then pointed to the sink to indicate that he wanted to play with water. He also gains our attention in this way, then points to his book or points to the cupboard where his drink and snack are kept.

At the end of the school day, Thea calls to her favourite adult in the class and then looks at the lit candle. She persists until they come over and hold the candle so that she can blow it out. She regularly draws our attention in this way to help her achieve other things she wants but is (physically) unable to accomplish on her own.

⁹ University College London and Great Ormond Street Hospital. *Eye-Pointing Classification Scale*.
Website: www.ucl.ac.uk/gaze

Theme 11: Solving problems

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate when they persevere to achieve an intended outcome in the physical environment.

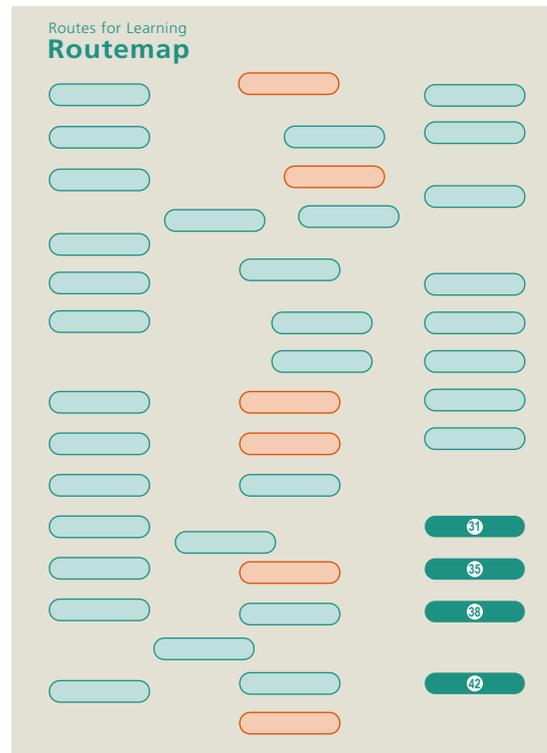
Although the behaviours included in this theme are described in terms of actions on objects in the physical environment (and are therefore shown on the right-hand side of the Routemap), the solutions described here may also be applied during interactions with people. For instance, 'repeating an action' (Routemap box 31 (Repeats action when first attempt unsuccessful)) is applied to a social game in Routemap box 30 (In the context of a familiar social game, perseveres by repeating action in order to get reward) (see 'Theme 7: Being sociable').

Assessing learners solving problems

Learners who have achieved an awareness of cause and effect (see 'Theme 9: Connecting actions with outcomes'), act intentionally to achieve outcomes within very familiar routines. Whenever a specific action is successful, the learner may experience pleasure or excitement (a sense of achievement) which serves to reinforce their sense of what the 'end state' of that action looks like.

With repeated practice, they begin to be able to anticipate the outcome of their own action both before and while they carry the action out. They can then start to notice when what is happening deviates from the (anticipated) end state. This 'feedback' process enables them to make adjustments to the original action so that it more efficiently achieves the end state. However, various factors can mean that, on occasions, the same action is less successful.

This theme relates to ways in which learners' intentional actions are further refined to overcome any difficulties they encounter. The Routemap boxes of this theme represent different solutions an individual learner might seek to apply.



- Routemap box 31 (Repeats action when first attempt unsuccessful) involves no change to the original action the learner has practised all along. The action is simply repeated because the end state has not yet been reached. This solution may well be successful on a subsequent trial.
- The behaviour described by Routemap box 35 (Does two different actions in sequence to get reward) is more sophisticated because it requires the learner to shift their focus to a 'sub-goal' and to achieve that before (and in order to reach) the anticipated end state. Effectively, they must insert a new action before or after the original action in order to resolve the problem in hand. This 'means-end' problem-solving is very much associated with 'object permanence' (where it may, for instance, be necessary to remove an obstruction in order to obtain a desired object).
- In Routemap box 38 (Modifies action when repeating action does not work), the original action no longer works to reach the end state, even when repeated, and a two-part ('means-end') solution is not appropriate either. Now the learner has to actively adapt the original action and, using trial and error, keep modifying it until it succeeds.
- By the time they achieve Routemap box 42 (Early problem-solving – tries new strategy when old one fails), the learner is able to see that the original action will not achieve their goal. They therefore cease to use it, and deploy an entirely different action which allows them to succeed.

Key questions

When considering assessment evidence and how it might relate to particular Routemap boxes in this sequence, the following key questions should be asked.

- Does the learner make repeated attempts to achieve the reward?
- To what extent do they attempt to modify their original action?
- Can they sequence actions to achieve their goal?
- Can they replace the original strategy with an alternative?
- How long do they persist in using the original strategy before changing?

31 Repeats action when first attempt unsuccessful

Assessment activities/things to try

Try:

- moving the learner's switch slightly
- changing the surface to make a toy harder to move
- using an adjustable pressure switch, increasing the pressure of the switch slightly.

Things to look for

Look for an example such as the learner missing a switch the first time, or failing to depress it sufficiently, but trying again and succeeding.

Teaching strategies (to move the learner towards this step)

You may wish to encourage problem-solving by moving the position of the switch slightly. However, beware of confusing or frustrating the learner.

This step can be taught in a range of situations (i.e. not just using switches and other forms of technology).

Distinguishing this step from others

The learner attempts to make something happen, but doesn't succeed.

The learner repeats the original action (perhaps more than once).

There is no attempt to change the action itself although the learner may, for instance, reach a little further or press a little harder.

Examples

If an object is placed just out of reach, Sophia will try several times to reach it. If the object is moved closer in small steps she will continue to reach for it in the same way until finally she is successful.

Leon tried to grasp a toy that was floating away in the pool. He reached out repeatedly as I moved him slowly in its direction, until eventually he got hold of it.

35 Does two different actions in sequence to get reward

Assessment activities/things to try

Build on an established routine to use two responses to gain a reward, e.g. the learner pressing one switch and then a second switch in sequence in order to get a reward on a computer programme.

Things to look for

Look for a decrease in time between the two actions. These should be done in sequence rather than pausing after the first action.

Teaching strategies (to move the learner towards this step)

The actions used here should be established responses. Support the learner to build a new routine by giving a reward only after the second action has been completed. Reduce the strength and frequency of prompts.

Distinguishing this step from others

The learner makes something happen by completing two separate actions in sequence. Both actions are necessary in order to be successful.

Examples

Lewis will pull a sheet off the switch and then press the switch to get the reward. He will put his hand into paint and then onto paper to make marks.

Alys watched as a toy was placed under a box on the floor. She then rolled over to it and lifted the box in order to get the toy. On another occasion, she moved my fingers away from the folding mirror, grasped and then opened the mirror up in order to look at herself.

38 Modifies action when repeating action does not work

Assessment activities/things to try

Within a routine based on established behaviours, alter the physical layout of a task.

In a very familiar social context (as, for instance, for Routemap box 33 (Initiates social game)), ensure a reward is not given.

Note the learner's reactions.

Things to look for

Look for the learner repeating an action then adapting or modifying it in an attempt to get a response.

Teaching strategies (to move the learner towards this step)

Prompt/scaffold a modified action and ensure that the learner obtains a result.

Try making changes to a toy that the learner knows how to use, e.g. use a mobile attached by a string to the learner's wrist and slacken the string so that the learner needs to make larger movements to get the mobile to work.

Distinguishing this step from others

The learner attempts to make something happen, but doesn't succeed using the original action (which may be repeated at first).

The learner then begins to adapt the original action. After modifying it significantly, the learner experiences success.

N.B. Only a single action is needed, but it has to be adapted. The final action retains some similarities to the original.

The learner's actions have the appearance of 'trial and error'.

Examples

If the chimes are moved so that he can't quite reach them, Geraint will try to move his arm in a different way and will reach higher in order to hit them.

Chloe will stretch further and, if necessary, alter the angle of her reach to get to an object she wants.

42

Early problem-solving – tries new strategy when old one fails

Assessment activities/things to try

Use an established routine where the learner's action results in a particular reward. Delay the reward to see if the learner then uses a different action in order to get the reward.

Things to look for

Look for a reduction in the time during which the learner tries the original action in order to gain a reward.

Look for the learner trying something new.

Teaching strategies (to move the learner towards this step)

When the learner recognises that the original strategy will not work, and as soon as an attempt at a new action is made, a reward should be given. As the learner becomes aware that repeating the original action will not work, a new strategy will be attempted more quickly.

Encourage/shape a second, different action when the learner repeatedly tries the first. Try:

- prompting the learner to use another action which is in their repertoire – then giving the reward
- using computer programmes which require alternate pressing of two switches – reward on the second switch
- using single switch programmes where the timing of switch-pressing is important
- moving the switch so that the learner needs to use the other hand.

Distinguishing this step from others

The learner attempts to make something happen, but doesn't succeed using the original action.

They cease repeating or trying to modify the original action and use another action which looks significantly different from the original.

Examples

After several attempts to get the switch to work, Ben stopped hitting it, picked it up and handed it to me. If Rachel taps someone standing close to her but they do not respond, she will try coughing in a further attempt to attract their attention.

Theme 12: Choosing options

Themes are not necessarily discrete routes we would expect learners to follow since their learning will be distributed across the Routemap. The boxes highlighted in each theme are intended to support further reflection on specific regions of the Routemap.

This theme groups behaviours which learners may demonstrate when they are presented with more than one item simultaneously.

In Theme 4 (Signalling preferences), learners communicated their preference for continuing, repeating or discontinuing a recent experience. Behaviours in this theme are observed when learners select from one of several objects, toys or symbols representing them. All are available at the same time and may be arranged spatially.

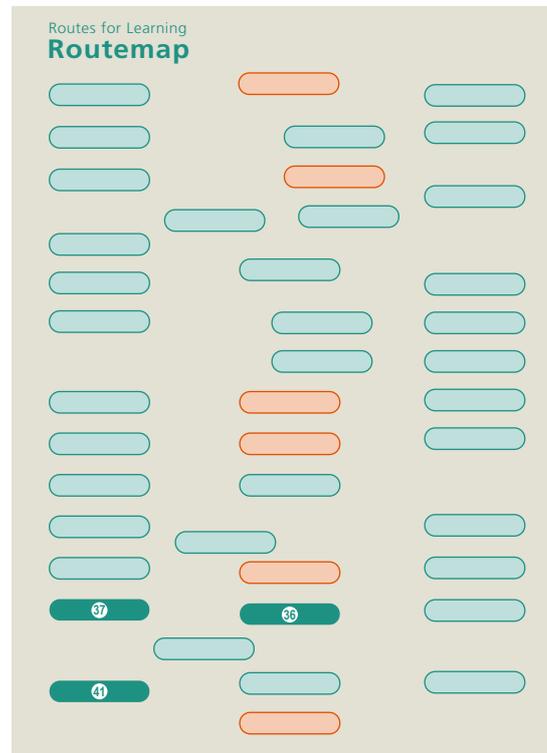
Assessing learners choosing options

In Routemap box 36 (Selects from two or more items), the learner chooses from options which they can easily see (or feel) and reach. Their behaviour is therefore directed towards the objects themselves. Although their choice can be observed, no communication is necessary. This skill represents a further progression from the cognitive achievements of Theme 8 (Changing focus), especially Routemap box 29 ('Looks' backwards and forwards between two objects (knows two objects are present)) which provides a platform for choosing between options.

The remaining Routemap boxes in this theme illustrate the progression from more 'primitive' intentional communication towards 'conventional' communication where learners begin to use single symbols, signs and/or words (see 'Table 2: Levels in the development of communication' on page 48 of *Routes for Learning: Guidance*).

In Routemap box 37 (Communicates choice to attentive adult), the options are visible, but they are not within reach. It is the learner's observable behaviour (e.g. touching, pointing or reaching) which conveys their choice. These actions relate specifically to the object the learner wants. Hence the communication partner can easily interpret their choice using the context.

In Routemap box 41 (Expresses preference for items not present via symbolic means), because the options are not visible nor within reach, the learner must use symbolic 'means' to achieve the end they desire (specifying an option). Visible symbols or pictures are more likely to support the learner in achieving this step because they share some of the physical and visual properties that objects had (when they were present). For instance, symbols:



- depict, to some extent, the object they represent
- can be set out (in space)
- can be touched manipulated, or pointed to – like objects
- serve as reminders of the options available, thereby reducing the memory load.

None of these supports are available when words are the symbolic means, and only the first applies in the case of manual signs. Therefore, at least at first, learners are likely to favour choosing with symbols, provided that they have a reliable method of indicating, although they may also be able to use one or two signs or words for very familiar preferences.

Key questions

When considering assessment evidence and how it might relate to particular Routemap boxes in this sequence, the following key questions should be asked.

- Does the learner clearly select a specific item?
- Are their behaviours entirely focused on the item itself, or do they also show communicative intent?
- Is their selection made using concrete, gestural or symbolic means?

36 Selects from two or more items

Assessment activities/things to try

Present two items to which the learner will respond, e.g. brightly coloured or noisy toys, a smell, a taste of drink, etc. Observe the learner to see if the response to one item lasts longer, or whether there is an obvious change in activity level.

Things to look for

Look for:

- 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; leave enough time for any responses
- an increased level of activity (e.g. arm or leg movements) during a pause following a taste of one particular food.

Teaching strategies (to move the learner towards this step)

- Offer two items in a variety of situations.
- Include one item known to be preferred by the learner.
- Change the position/order of items over several presentations.
- Allow the learner to explore and make their own selection. (Try not to prompt them to 'choose'.)

Distinguishing this step from others

The learner selects one item when both/all items are presented together and are equally accessible (i.e. within their reach/view).

They have previously had the opportunity to see/manipulate each of the items individually (especially if the learner has a visual impairment).

The learner's focus is on one preferred item and their reach (if any) is clearly an attempt to grasp or manipulate the item itself. Their actions do not appear designed to communicate anything to another person.

Examples

We moved Casper onto a mat on the floor, after putting a toy on each side of the mat. He manoeuvred himself towards the flashing tambourine, whichever side it was on, and spent time playing with it, even when we swapped its location several times.

Lowri was given a plate containing pieces of banana and soft broad beans. She chose to eat all of the banana, piece by piece, but didn't touch any of the beans.

37 Communicates choice to attentive adult

Assessment activities/things to try

Offer two items simultaneously. Observe the learner closely for obvious or increased attention to one of the items which communicates their preference.

Things to look for

Look for:

- smiling
- eye pointing
- reaching
- turning towards a preferred item.

Teaching strategies (to move the learner towards this step)

Offer a preferred item alongside a non-preferred item. If there is no clear response to the preferred item, either move it, bring it closer or cause it to make a noise to attract the learner's attention. Try this with a variety of objects and situations, changing the position/order of items over several presentations.

Distinguishing this step from others

The learner indicates their interest in one particular item:

- when both/all items are presented together
- even if the items are out of their reach
- when the position/order of items is randomised over several presentations.

The learner's behaviour, while focused on a preferred item (as in Routemap box 36 (Selects from two or more items)), is not just an attempt to physically obtain it.

Their behaviour here also acts as a 'signal' to the other person – for instance, it may look more like a 'gesture', might incorporate some degree of direct eye contact or indicate an apparent response to a communication partner.

Examples

Craig's facial expression changes when an adult picks up his favourite toy or snack visible among others. Anna reaches towards the toy she wants, eye-pointing towards it, sometimes glancing towards the adult.

41

Expresses preference for items not present via symbolic means

Assessment activities/things to try

Present to the learner objects of reference/pictures/symbols/photographs for items of interest which are not present. Does the learner indicate or pay attention to one of the symbols in order to request a preferred item?

Things to look for

Look for the learner giving attention to a symbol for a preferred item and then waiting for the item to be presented.

Teaching strategies (to move the learner towards this step)

Show a photograph or symbol of a preferred item to the learner before presenting a stimulus. Repeat this to build up the association. Now show two objects/photographs/symbols – one for the preferred item plus one other – then present the item related to the symbol which has been indicated.

Distinguishing this step from others

The learner indicates the preferred item by selecting its symbolic representation from several symbols, objects of reference, pictures or photographs.

None of the 'available' items are physically present.

All of the symbolic options are easily accessible to the learner who has a reliable method of indicating.

The learner's behaviour is focused on the symbolic representation until it has been 'received'/confirmed by another person who then provides the indicated item.

The learner accepts some delay between choosing and receiving the chosen item.

Examples

Ollie will touch a clear photo of the item he wants from a choice of two very familiar, favourite toys which are kept in the cupboard. Currently, these include a toy vehicle, a toy alien and a fuzzy ball.

Jodi selects her preferred snack item by eye-pointing to a symbol from four symbols on a choice board.

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