

# Foundation Skills



## Introduction to foundation skills

Foundation skills are the developmental building blocks for learning and are essential for establishing firm foundations for everyday tasks. They enable children to acquire age appropriate life skills and function successfully. In essence, children learn the skills to:

- Look after themselves
- Work effectively in school
- Play

Occupational therapists have expertise in assessing foundation skill development and identifying the link between acquisition of a foundation skill and classroom performance. Occupational therapists use a variety of approaches and interventions depending on the theoretical model used. A 'top down' approach uses task analysis, modification and adaptation to enable children to achieve functional tasks to enhance learning. 'Bottom up' approaches are based on the assumption that, if foundation motor skills are developed, motor control will emerge and task performance will be improved. Occupational therapists may use either approach or a combination of both, but generalisation is considered the key to learning.

Throughout their early years, children experience a range of activities that promote the development of individual building blocks. The 'foundation skills for learning' (Figure FS 0.1) shows the range of skills involved in the learning process that are essential for establishing firm foundations for every day tasks. Since all skills are interrelated, the delay in acquiring one skill will have a knock-on effect for many others and children will find performing activities of daily living, work and play extremely challenging.

Foundation skills continue to develop as a natural process whilst working through Foundation Stage and Key Stage 1 and 2 curricula. The primary years provide many opportunities for foundation skills to be developed and enhanced. Children use these skills throughout the school day and many experiences occur which provide opportunities for foundation skills to be consolidated and enhanced. For example:

- To use scissors accurately to cut along a line children need to have developed postural stability, manual dexterity, visual motor integration, visual spatial relationships, motor planning and bilateral integration.

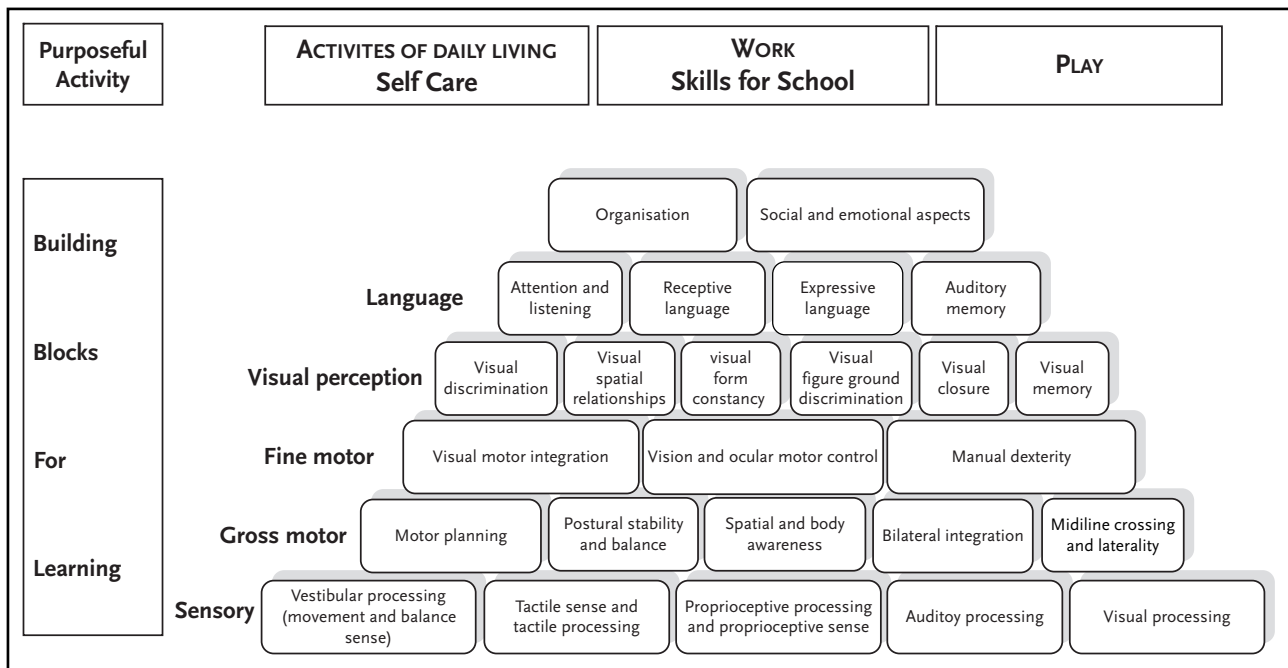


Figure FS 0.1 Foundation Skills for Learning.

- To catch a ball, children need to have developed postural stability and balance, spatial and body awareness, bilateral integration, midline crossing, visual motor integration and ocular motor control.

By the time children leave primary school it is essential that all necessary foundation skills are fully established in preparation for transition into secondary school. The foundation skills are:

- Sensory processing
- Gross motor coordination
- Fine motor control
- Perception
- Language
- Organisation
- Social and emotional aspects

The foundation skills are adapted from our previous book *Occupational Therapy Approaches for Secondary Special Needs*, as follows:

- *What it is*—defines the specific skill area
- *Why is it important?*—explains why the child needs to acquire the skill
- *What are the implications*—suggests what the class teacher may observe when the skill is not in place
- *Teaching strategies*—provides advice and ideas on classroom management
- *Activities to improve the skill*—suggests activities for individual or small group work
- *Resources for further information and advice*—gives further ideas for resources and additional reading/information



## References



Jenkinson, J., Hyde, T. and Ahmad, S (2002) *Occupational Therapy Approaches for Secondary Special Needs*. London, Whurr.



# Introduction to sensory processing



## What is it?

‘Sensory processing involves the registration and modulation of sensory information, as well as the internal organisation of the sensory input, so human beings can execute successful adaptive responses to situational demands and thus engage meaningfully in daily occupations (Humphrey, 2002). Adaptive behaviours are purposeful and goal-directed and enable individuals to overcome challenges and to learn new skills’ (Prudhomme White *et al.*, 2007); such as when you touch something extremely hot you withdraw your hand; a baby sees something attractive and reaches out, ultimately leading to crawling and more complex movement patterns and skills.



## Why is it important?

Sensory processing is considered to be an internal process of the nervous system which helps us receive, organise and understand sensory information from both the environment (auditory and visual input as well as taste and smell) and from within our bodies (touch, movement and joint receptors). This then helps us know how to respond to environmental demands. Efficient sensory processing is needed to enable us to participate fully in everyday life and adequately engage in our daily routines and roles.

Each individual responds differently to sensory information as the nervous system has ‘thresholds’ for acting. We can respond easily to sensory input if we have a ‘low threshold’ and this is said to be ‘hyper-responsive’; or we can take a long time to respond and be ‘hypo-responsive’. Children in the first category tend to avoid situations which increase their sensory input and children in the latter category seek

sensory input. The basic patterns of high and low threshold responses to sensory input are:

- *Sensory seeking*, e.g. may be on the move touching everything
- *Sensory avoiding*, e.g. may seem withdrawn, reluctant to move, climb, etc., avoid touching things, getting messy, etc.
- *Sensory sensitivity*, e.g. oversensitive to sound and/or touch, and easily irritated (Dunn, 1999)

It is possible to have a low threshold for one sensory input and a high threshold in another, e.g. become distracted by lots of noise but not notice lots of colour and visual ‘clutter’. Threshold levels and our ability to cope with sensory information are dependent on a variety of factors and vary from day to day as well as throughout the day. We may be competent drivers and be able to drive around familiar places with the radio on and children chatting in the car, but if we are in an unfamiliar place and it starts to rain heavily we may ask the children to stop chatting and turn the radio off to enable us to process the increased sensory information and focus, in order to successfully carry out the familiar task.

Self-regulation or modulation is the way we manage the sensory input available to us through the ability to attain, maintain and change arousal level/alertness appropriately to match the demands of the environment. Problems occur when there is ‘difficulty responding to sensory input with behaviour that is graded relative to the degree, nature or intensity of sensory information. Responses are inconsistent with the demands of the situation, and inflexibility adapting to sensory challenges encountered in daily life is observed’ (Miller *et al.*, 2007).

We all have sensory preferences in everyday life; some of us choose to wear bright clothing and chunky jewellery, to decorate our homes with strong bright colours and to have lots of clutter, while others prefer softer plain colours and clutter free spaces in order to feel calm. Some people enjoy fairground rides or adventure sports, while others prefer activities that are more sedentary. It is only when an extreme response interferes with everyday life that there is cause for concern.

It is important that class teachers consider their own sensory preferences and how these are evident in their classroom and style of teaching, as this may not be ‘in sync’ with a child with sensory needs and, as such, any strategies implemented must work for both teacher and child. It can be a challenge to balance the needs of all the children within the class.



### What are the implications?



Parham and Mailloux (2005) reported that sensory processing problems are often associated with decreased social skills, immature play skills, impaired self-concept, decreased fine and gross motor skills, and difficulties performing daily living skills. There may be many other reasons for children to show these characteristics, but where sensory processing difficulties may be the cause, it is likely that sensory seeking, sensory avoidance or sensory sensitivity is causing the behaviour.

In the classroom, children with these difficulties may present with:

- Some challenges performing daily living skills
  - difficulty wearing certain clothing
  - being a messy eater or having a rigid diet
  - difficulty organising oneself
- Decreased social skills
  - a tendency to invade another's personal space
  - appearing not to listen to others
  - a tendency to butt into conversations
- Immature play skills
  - a tendency to avoid messy play
  - flitting from one task to another
  - a narrow choice of activities
- Impaired self-concept
  - impaired self-esteem
  - a reluctance to take part in class activities
  - unrealistic expectations of self and task
- Decreased fine and gross motor skills
  - poor pencil skills, impaired grasp
  - frequently bumping into others or furniture
  - constantly on the go

The identification of sensory processing difficulties and needs should be made by a specialist in this area, so if a teacher is concerned about a child, advice needs to be sought from a person trained in this area, e.g. an occupational therapist.

Within this section, sensory processing has been broken down into:

- Vestibular processing (movement and balance sense)
- Tactile sense and tactile processing
- Proprioceptive processing/sense
- Auditory processing
- Visual processing



## References



Dunn, W. (1997) The impact of sensory processing abilities on the daily lives of young children and their families: a conceptual model. *Infants and Young Children*, 9 (4), 23–35.

Dunn, W. (1999) *Sensory Profile, User's Manual*. San Antonio, Texas, Psychological Corporation.

Dunn, W. (2001) The sensations of everyday life: theoretical, conceptual and pragmatic considerations. *American Journal of Occupational Therapy*, 55, 608–620.

Millar, L.J. & Lane, S.J. (2000) Toward a consensus in terminology in sensory integration theory and practice: part 1, taxonomy of neurophysiological processes. *Sensory Integration Special Interest Section Quarterly*, 23 (2). Rockville, Maryland, American Occupational Therapy Association.

Miller, L.J., Anzalone, M.E., Lane, S.J., Cermak, S.A. & Osten, E.T. (2007) Concept evolution in sensory integration: a proposed nosology for diagnosis. *American Journal of Occupational Therapy*, 61 (2), 135–140.

Parham, L.D. & Mailloux, Z. (2005) Sensory integration. In: J. Case-Smith (ed.), *Occupational Therapy for Children* (5th edn). St Louis, MO, Moseby.

Prudhomme White, B., Mulligan, S., Merrill, K. & Wright, J. (2007) An examination of the relationships between motor and process skills and scores on the sensory profile. *American Journal of Occupational Therapy*, 61 (2), 154–160.



### Further reading and resources



Ayres, J.A. (1979) *Sensory Integration and the Child: Understanding Hidden Sensory Challenges*. Los Angeles, CA, Western Psychological Services.

Bhreathnach, E. (1995) *Your Child's Sensory Needs*. Belfast, BTRS.

Bissell, J., Fisher, J., Owens, C. & Polcyn, P. (1998) *Sensory Motor Handbook: a Guide for Implementing and Modifying Activities in the Classroom*, 2nd edn. San Antonio, Texas, Therapy Skill Builders.

Brown, C. & Dunn, W. (2002) *Adolescent/Adult Sensory Profile User's Manual*. San Antonio, Texas, The Psychological Corporation.

Bundy, A.C., Murray, E.A. & Lane, S.J. (2002) *Sensory Integration: Theory and Practice*, 2nd edn. Philadelphia, FA Davis Company.

Cribbin, V., Lynch, H., Bagshawe, B. & Chadwick, K. (2003) *Sensory Information—information booklet a resource for parents and therapists*. Dublin, Sensory Integration Network, UK and Ireland.

Fink, B.E. (1989) *Sensory Motor Integration Activities*. Tucson, AZ, Therapy Skill Builders.

Fisher, A.G., Murray, E.A. & Bundy, A.C. (1991) *Sensory Integration Theory and Practice*. Philadelphia, F.A. Davis Company.

Humphrey, R. (2002) Young children's occupations: explicating the dynamics of developmental processes. *American Journal of Occupational Therapy*, 56, 171–179.

Jeffries, J.A. & Jeffries, R. (2001) *Auditory Processing Activities: Materials for Clinicians and Teachers*. Perth, Western Australia, Unicom International.

Koomar, J. & Friedman, B. (1998) *The Hidden Senses Your Muscle Sense*. Hugo, Minnesota, PDP Press.

Kranowitz, C.S. (1998) *The Out of Sync Child—Recognising and Coping with Sensory Integration Dysfunction*. New York, Perigee.

Newton Inamura, K. (ed.) (1998) *SI for Early Intervention: a Team Approach*. San Antonio, Texas, Therapy Skill Builders.

Oettter, P., Richter, E. & Frick, S. (1995) *MORE: Integrating the Mouth with Sensory and Postural Functions*, 2nd edn. Hugo, MN, PDP Press Inc.

Trott, M.C. (2002) *Oh Behave! Sensory Processing and Behavioural Strategies: a Practical Guide for Clinicians, Teachers and Parents*. Tucson, AZ, Therapy Skill Builders/ Psychological Corporation.

Tupper, L. & Miesner, K. (1995) *School Hardening, Sensory Integration Strategies For Class and Home*. San Antonio, Texas, Therapy Skill Builders.

Williams, M. & Shellenberger, S. (1996) *'How Does Your Engine Run?': a Leader's Guide to the Alert Program for Self-regulation*. Albuquerque, Therapy Works Inc.

Young, S. (1988) *Movement is Fun. A Preschool Movement Program*. Torrance, Sensory Integration International.



## Websites



[www.alertprogram.com](http://www.alertprogram.com)  
[www.besmart.org.uk](http://www.besmart.org.uk)  
[www.out-of-sync-child.com](http://www.out-of-sync-child.com)  
[www.ot-innovations.com](http://www.ot-innovations.com)  
[www.sensoryintegration.org.uk](http://www.sensoryintegration.org.uk)  
[www.sinetwork.org](http://www.sinetwork.org)  
[www.sifocus.com](http://www.sifocus.com)  
[www.spdnetwork.org](http://www.spdnetwork.org)  
[www.sensory-processing-disorder.com](http://www.sensory-processing-disorder.com)  
[www.sensorystories.com](http://www.sensorystories.com)



## Further resources



### *Refer to Foundation Skills*

- FS 1A, 1B, 1C, 1D, 1E within this area pages 11–27

### *Refer to Occupational Therapy Approaches*

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 8 Sensory strategies page 323

### *Refer to Appendix*

- A 1 Ages and stages of development page 361
- A 7 Movement programmes and gross motor resources page 381
- A 9 Resources for developing social, emotional and behavioural skills page 389



## Vestibular processing (movement and balance sense)

### ▶ What is it?

‘The vestibular sense is our sense of movement. Our movement system enables us to stay upright, to adjust our position, to balance, and to detect motion. Through movement we also develop our sense of direction and appreciation of spatial relationships. The sensation of movement influences our muscle tone in that we tense our muscles if we are on something which moves in order to keep our balance. If we relax our muscles on a moving object we fall off. We adjust our body in relation to the speed and force of the movement. The vestibular system links with our visual system in that we sense movement through merely seeing something move’ (Bhreathnach, 1995). The vestibular system is activated by the proprioceptive system during movement to modify balance response.

### ▶ Why is it important?

The vestibular system is important for effective posture and balance in relation to the activity being performed. In order to achieve and maintain a calm, alert state, well-modulated vestibular processing is essential. ‘We feel the calming effects of slow vestibular stimulation when we rock in a rocking chair and feel the arousing effects of fast vestibular stimulation when riding in a roller coaster. The vestibular system also helps keep the level of arousal of the nervous system well balanced.’ (Ayres, 1979).

### ▶ What are the implications?



#### Sensation avoiding

Children who are oversensitive to vestibular input tend to avoid movement, they may:

- Have a rigid posture and be overwhelmed by movement
- Avoid playing on playground equipment, such as swings, slides, merry-go-rounds

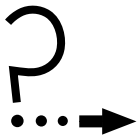
- Be fearful of heights and any activities ‘off the ground’, e.g. wall bars, beam/bench, kerbs, PE apparatus
- Dislike stairs and escalators—rely on the handrail longer than others of the same age
- Become disorientated when bending over
- Become car/motion sick easily
- Avoid rough and tumble play
- Dislike being up side down, e.g. forward rolls, handstands, cart wheels

### Sensation seeking

Children who have an undersensitive vestibular system tend to seek vestibular input and may:

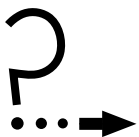
- Have no sense of limits or control when in potentially dangerous situations, showing no fear
- Crave movement, playground/fairground rides—are ‘thrill seekers’ and do not feel dizzy or sick when other children do
- Seek constant movement, e.g. rocking, spinning, running, balancing on two legs of a chair, and are always ‘on the go’
- Like sudden movements—will often ‘throw’ themselves at equipment/mats/floor
- Enjoy climbing high and do not think of the consequences

### ▶ Teaching strategies for sensation avoiding



- Prepare the child in advance of changes in position; break down the task into achievable steps.
- Grade the activity to build up the child’s tolerance of movement gradually.
- Allow the children to lead the activity at their own pace to prevent adverse reactions.

### ▶ Teaching strategies for sensation seeking



- Incorporate movement activities into the child’s daily life, e.g. trampolining, running, football.
- Give the child regular movement breaks throughout the day.
- Allow the child to regularly change position (floor sitting, sitting on a chair, standing, lying on the floor, kneeling) if it helps her.
- Sit the child on a movin’sit cushion, a therapy ball or place one chair leg through a hole in a tennis ball so that the chair rocks.

## ▶ Activities to improve vestibular processing



It is important with all vestibular activities that the child is in control and must be allowed to stop or slow down on request, as some children are extremely sensitive to movement and may become dizzy, pale and sick very quickly. Precautions should be taken to reduce the chance of a child putting himself at risk. After completing activities children often require resistive/deep pressure sensory input to modulate and calm themselves.

The following ideas are graded so that the most challenging vestibular tasks, e.g. spinning, are presented at the end of the list.

- *Crawling*—in crawling position (on hands and knees) ask the child to pretend to be a rocking horse, lying on his tummy commando crawl along a mat.
- *Rocking*—Lay the child over a large ball or a barrel with hands on the floor and rock backwards and forwards from hands to knees. Use rocking chairs or wobble cushions such as movin’sit.
- *Bouncing*—space hoppers, trampolines, car inner tubes, etc.
- *Sliding*—playground slides, move in different ways.
- *Rolling*—log/pencil rolling across the floor with arms above head, trying to keep in a straight line. Close eyes to make the task easier. Increase difficulty by asking the child to hold a beanbag in hands or between knees. Roll on cushions or on sloped surfaces.
- *Spinning*—encourage the child to be a helicopter or spinning top. Try spinning different ways, e.g. both feet, one foot flat, on bottom, on back, in/on commercial spinning equipment.
- *Swinging*—playground swings, monkey bars, adventure playground, ropes/tyres.

Kinaesthesia is the term commonly used to describe a combination of tactile, proprioceptive and vestibular processing (see Glossary page 423).

## ▶ References



Ayres, J.A. (1979) *Sensory Integration and the Child: Understanding Hidden Sensory Challenges*. Los Angeles, CA, Western Psychological Services.

Bhreathnach, E. (1995) *Your Child’s Sensory Needs*. Belfast, BTRS.

DeGangi, G.A. (1994) *Documenting Sensorimotor Progress*. Tucson, AZ, Therapy Skill Builders.


Fisher, A.G., Murray, E.A. & Bundy, A.C. (1991) *Sensory Integration Theory and Practice*. Philadelphia, F.A. Davis Company.

Kranowitz, C.S. (1998) *The Out of Sync Child—Recognising and Coping with Sensory Integration Dysfunction*. New York, Perigee.

Williams, M. & Shellenberger, S. (1996) ‘How Does Your Engine Run?’ *A Leaders Guide to the Alert Program for Self-regulation*. Albuquerque. Therapy Works Inc.

 **Further reading**

See introduction to section page 5.

 **Further resources*****Refer to Foundation Skills***

- FS 1B Tactile/sense and tactile processing page 15
- FS 1C Proprioceptive processing/sense page 19
- FS 3B Vision and ocular motor control page 63
- FS 7 Social and emotional aspects page 113

***Refer to Occupational Therapy Approaches***

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 8 Sensory strategies page 323
- OTA 10 Consolidating foundation skills through group activities page 333

***Refer to Appendix***

- A 7 Movement programmes and gross motor resources page 381
- A 9 Resources for developing social, emotional and behavioural skills page 389

***Refer to Equipment Resources page 407***

## Tactile sense and tactile processing

### ▶ What is it?

‘The skin has many different kinds of receptors for receiving sensations of touch, pressure, texture, heat or cold, pain and movement of the hairs on the skin. Although we may not think much about the role of touch in our lives, the tactile system is the largest sensory system and it plays a vital role in human behaviour, both physical and mental’ (Ayres, 1979).

### ▶ Why is it important?

It is through the tactile system, that we first receive information about the world. Until language, motor skills and cognitive processes develop, we are highly dependent on our sense of touch. Receiving and processing this information effectively allows us to feel safe, calmed, and to develop both socially and emotionally. Touch can be both protective and discriminative, helping to alert our bodies to potential danger and allowing us to identify where and what is being touched. When the child’s protective function is working, the level of arousal is high and the discrimination function will be less efficient.

### ▶ What are the implications?



#### Sensation avoiding

Children who are oversensitive to touch have an overactive protective function and this is seen in the tendency to avoid tactile sensation (known as being tactile defensive) in order to remain calm. They may:

- Dislike messy activities/play, e.g. having glue, paint, chalk, sand, food on hands/face
- Flinch away or be fearful/anxious of unexpected touch or light touch or prefer firm touch
- Become distressed when standing close to peers in a line and/or push others away or isolate themselves

- Over react when responding to texture, touch or injury, e.g. minor cuts, may hit out or bite others
- Show distinct likes and dislikes with texture of activities/objects and so develop a limited repertoire
- Have a rigid diet or a limited range of acceptable foods, e.g. 'white' food, sliced bread, yoghurt
- Explore objects with fingertips, but seldom explore with whole hand—may react defensively by touching everything
- Dislike wind, rain or taking showers and cleaning teeth
- Dislike tight/restrictive clothing or specific textures, may choose long sleeves and trousers in the summer and minimal clothing in the winter

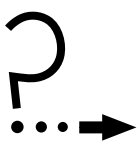
### Sensation seeking

Children who are undersensitive to touch are less aware of being touched and therefore have diminished protective responses. They may also seek tactile sensation in order to discriminate and therefore learn. They may:

- Seek out messy play/activities/textures; be unaware of food/paint on hands/ face and have difficulty keeping clean and tidy
- Have an untidy dishevelled appearance—will not notice if clothing is crumpled or inside out
- Show a preference for tight clothing and items that are too small
- Have limited awareness of personal space of self and that of others—tend to invade personal space of others, touch people and items, seek physical contact, sit too close to other children at carpet time or play with other children's hair or clothing
- Lack awareness of injury—may not notice cuts/bruises
- Be unaware of touch from others or objects unless intense, frequently hurt other children when playing, e.g. can stand on someone's foot without noticing
- Fumble and lack dexterity with making and doing activities
- Prefer intense flavours and textures of food, e.g. spicy, sweet, salty, and sour
- Put things in mouth—may mouth items and chew sleeves/pencils or bite self



### Teaching strategies



- Avoid light touch, use firm pressure when touching the child and approach from the front.
- Regulate the child's environment to suit the child's need, e.g. limit or increase the amount of items in a working space.
- Place the child at the end of the line.
- Position the child in the classroom away from the main thoroughfare so the child is not accidentally knocked or touched.

- Use fiddle toys to provide ‘legitimate fiddling’, permit biting an object such as a tube on the end of pencil.
- Consider the texture of work surfaces/equipment/toys, e.g. table, paper, maths equipment, if these cause distress to the child. Wrap tape around a piece of chalk.
- Discuss the child’s clothing with parents—removal of labels may help.



### Activities to improve tactile discrimination



It is important to remember that for children who avoid tactile sensation (tactile defensive) some textures and touch can be distressing. It is therefore essential to approach activities sensitively, starting with less challenging textures and building from this to allow the child to control the level of contact and stop when she needs to. For children who are less aware of touch and may be touch seeking, there is a need to help develop discriminative ability. Professionals who specialise in these areas may be able to offer advice to help provide an environment in which the child can develop, e.g. occupational therapists.

- *Water play*—play in water that is different temperatures and with or without bubbles. Use a variety of toys, containers, shells, kitchen utensils to pour and measure.
- *Play dough activities*—making dough, rolling, modelling, etc. Texture can be added with lentils/sand, etc.
- ‘*Drawing*’ in a variety of substances, e.g. sand, paint, rice, chopped jelly, cornflour and water, shaving foam.
- *Encourage the child to explore different textures* on his skin, e.g. paint brushes, scrubbing brush, pot scourers, soft cloths, fur, liquid soap.
- *Dress up* in different clothing, e.g. silk, fur, hats, false beards, bangles.
- Play with different textured objects and ask the child to identify different features, e.g. hard/soft, warm/cold, rough/smooth.
- *Feely box*—hide objects in rice/sand/pasta/polystyrene pieces and ask the child to find them.
- *Feely bag*—place a variety of objects into a bag and ask the child to feel them and identify before taking them out of the bag. Ask the child to find a specific item; if there are two identical sets one can be visible for the child to compare with.
- ‘*Draw*’ letter/shapes on the hand or back of the child and ask her to identify.

Kinaesthesia is the term commonly used to describe a combination of tactile, proprioceptive and vestibular processing (see Glossary page 423).

## ▶ References



Ayres, J.A. (1979) *Sensory Integration and the Child: Understanding Hidden Sensory Challenges*. Los Angeles, CA, Western Psychological Services.

Bissell, J., Fisher, J., Owens, C. & Polcyn, P. (1998) *Sensory Motor Handbook: a Guide for Implementing and Modifying Activities in the Classroom*, 2nd edn. San Antonio, Texas, Therapy Skill Builders.

Fisher, A.G., Murray, E.A. & Bundy, A.C. (1991) *Sensory Integration Theory and Practice*. Philadelphia, F.A. Davis Company.

Kranowitz, C.S. (1998) *The Out of Sync Child—Recognising and Coping with Sensory Integration Dysfunction*. New York, Perigee.

## ▶ Further reading



See introduction to section page 5.

## ▶ Further resources



### *Refer to Foundation Skills*

- FS 1A Vestibular processing page 11
- FS 1C Proprioceptive processing/sense page 19
- FS 2C Spatial and body awareness page 43
- FS 7 Social and emotional aspects page 113

### *Refer to Occupational Therapy Approaches*

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 4 Building firm foundations for handwriting page 271
- OTA 8 Sensory strategies page 323
- OTA 10 Consolidating foundation skills through group activities page 333

### *Refer to Appendix*

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 7 Movement programmes and gross motor resources page 381
- A 9 Resources for developing social, emotional and behavioural skills page 389

## Proprioceptive processing/sense

### ▶ What is it?

Proprioception is our innate sense of ‘position’. We receive information from our muscles and joints through muscle contraction/activation, which helps us know how our body is moving *and that our body can do what we need it to*. This sense allows us to know our body position without looking—if we close our eyes, we know that our feet are on the floor or we are able to move an arm behind us. It makes us aware of our precise body position in space and enables us to judge grading (speed and force) of movements. This system has been described as our ‘internal sense of vision’ (Bhreathnach, 1995). Proprioception is closely linked with our other senses, particularly tactile and vestibular, and is a prerequisite for balance, posture, motor planning and coordination.

### ▶ Why is it important?

‘Proprioception helps us move. With poor proprioception our body movements would be slower, clumsier, and involve more effort. If the proprioception from your hands were not sufficient to tell you what your hands were doing, it would be very difficult to button clothes, take something out of a pocket, screw a lid on a jar, or remember which way to turn a water faucet [tap]. Without adequate proprioception from the trunk and legs, you would have a very hard time getting in or out of an automobile [car], walking down steep stairs, or playing sport. You tend to rely upon visual information by looking closely at what your body is doing. Children with poorly organised proprioception usually have a lot of trouble doing anything when they cannot see it with their eyes’ (Ayres, 1979).

### ▶ What are the implications?

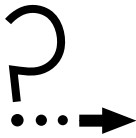


Children with poor proprioceptive processing may:

- Be constantly ‘on the go’ and fidgeting, rock on a chair and balance on two legs of the chair
- Have low muscle tone and poor posture, so ‘flop/prop’ and become tired easily

- Become easily frustrated
- Stamp when walking (heavy footed), grind teeth and speak too loudly
- Be more over reactive with other systems, e.g. emotional responses
- Seek out physical contact/ hugs
- Press too hard or too lightly with a pencil when writing
- Drop things or overshoot when pouring
- Use too much or too little force with actions, always seems to break things and may hurt others unintentionally during play
- Bump into others/furniture/doorframes, etc., frequently and trip over 'thin air'

### ▶ Teaching strategies



*'Heavy muscle work' or activities against resistance are the key way of providing calming and organising through proprioceptive input.*

- Provide activities against resistance or involving more than usual pressure which will enable the child to become more aware of her body position, e.g. rolling and squashing play dough in her hands while standing.
- Encourage the child to walk to school carrying a backpack.
- Provide opportunities for the child to carry a full backpack or heavy tray between lessons or to the school office at times when becoming particularly restless.
- Build movement breaks into the child's day.
- Sit on movin'sit cushion to raise sensory awareness and concentration.
- Teach child to use visual and cognitive strategies to help plan and carry out movements.

### ▶ Activities to improve proprioception



- *Dressing up* in heavy clothes, especially hats, shoes, necklaces.
- *Drawing/painting* on a large scale, in different planes (horizontal and vertical) and on textured surfaces such as corrugated card, tree bark, sand paper, sugar paper.
- *Games involving some resistance* when taking toys apart, e.g. stickle bricks, lego, popoids.
- *PE activities*—pulling along a bench, bunny jumps, hopping, push-ups against the wall or from kneeling position.
- *Any push/pull activities*, e.g. tug of war.
- *Trampolines*, space hoppers and skipping.
- *Animal walks*—ask the child to move like an animal, e.g. elephant, snake, rabbit, kangaroo, frog, crocodile.
- *'Pressure sandwich/roll'*; make the child into a hot dog or sandwich by rolling him in a mat or blanket and then applying pressure to different parts of his body.

- *Get the child to help to carry shopping/school bags, move chairs, mats, gym equipment.*
- *When sitting, ask the child to place her hands on the sides of her chair, palm down and lift her body off the seat.*

Kinaesthesia is the term commonly used to describe a combination of tactile, proprioceptive and vestibular processing (see Glossary page 423).

▶ **References**



- Ayres, J.A. (1979) *Sensory Integration and the Child: Understanding Hidden Sensory Challenges*. Los Angeles, CA, Western Psychological Services.
- Bhreathnach, E. (1995) *Your Child's Sensory Needs*. Belfast, BTRS.
- Bissell, J., Fisher, J., Owens, C. & Polcyn, P. (1998) *Sensory Motor Handbook: a Guide for Implementing and Modifying Activities in the Classroom*, 2nd edn. San Antonio, Texas, Therapy Skill Builders.
- Newton Inamura, K. (1998) *SI for Early Intervention a Team Approach*. San Antonio, Texas, Therapy Skill Builders.
- Tupper, L. & Miesner, K. (1995) *School Hardening: Sensory Integration Strategies For Class and Home*. San Antonio, Texas, Therapy Skill Builders.
- Williams, M. & Shellenberger, S. (1996) *'How Does Your Engine Run?' a Leaders Guide to the Alert Program for Self-regulation*. Albuquerque, Therapy Works Inc.

▶ **Further reading**



See introduction to section page 5.

▶ **Further resources**



***Refer to Foundation Skills***

- FS 1A Vestibular processing page 11
- FS 1B Tactile sense and tactile processing page 15
- FS 2B Postural stability and balance page 39
- FS 2C Spatial and body awareness page 43
- FS 7 Social and emotional aspects page 113

***Refer to Occupational Therapy Approaches***

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 3 Building firm foundations for fine motor control page 259
- OTA 4 Building firm foundations for handwriting page 271
- OTA 8 Sensory strategies page 323
- OTA 10 Consolidating foundation skills through group activities page 333

***Refer to Appendix***

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 7 Movement programmes and gross motor resources page 381
- A 9 Resources for developing social, emotional and behavioural skills page 389

***Refer to Equipment Resources page 407.***

# Auditory processing

## ▶ What is it?

‘Auditory processing is the ability to perceive and understand what is heard in the environment. This involves more than the sense of hearing. Understanding auditory information requires intricate processing. Discriminating, associating and interpreting sounds; remembering and comprehending what is heard; and relating words in a meaningful way are all parts of auditory processing’ (Bissell, 1988). It is important to be able to inhibit background sounds to focus on the specific sounds or voices that require attention.

## ▶ Why is it important?

‘Good auditory processing is an important foundation for the development of language skills and plays an important role in children’s classroom performance and peer relationships. Children who experience difficulty with processing what they hear may at times appear confused or inattentive. They may haphazardly rush into tasks and may take a long time to respond to directions and to complete tasks. They may over respond to competing noise in the environment’ (Bissell, 1988). Children may have difficulty following several instructions or these will require extra effort. They are likely to be visual learners.

## ▶ What are the implications?



### Sensation avoiding

Children who are oversensitive to sound tend to avoid auditory input and may:

- Dislike unexpected noises such as fire bells, loud bangs and may respond with anxiety or fear
- Avoid loud noises or certain sounds, as these may feel painful
- Frequently ask children and adults to be quiet when they are talking
- Dislike background noise such as the hum of an interactive whiteboard projector, fans, children chatting, noisy heaters, chairs scraping on the floor, clock ticking

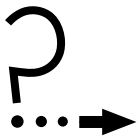
- Find it hard to focus on work when there is a lot of noise
- Dislike noisy places such as a swimming pool or dining hall
- Be distractible and have poor concentration
- Cover their ears or scream at certain noises

### Sensation seeking

Children who are undersensitive to sound tend to either seek auditory input or appear passive. They may:

- Not respond to voices, even in a quiet environment
- Appear not to hear
- Appear oblivious to what is going on around them
- Need instructions to be repeated
- Talk aloud to themselves, make noises with their body or objects
- Love excessively loud noises
- Show poor phonological awareness and difficulty with literacy

## ▶ Teaching strategies



- Make eye contact with the child before speaking.
- Give one instruction at a time.
- Speak slowly and clearly, repeat instructions to child and ensure he has understood by asking him to repeat.
- Ensure the child does not move away until the instruction is finished.
- Wait for the child to process the information and respond; this is likely to take her longer than her peers.
- Use visual timetables/work systems/ prompt sheets to back up instructions, give physical demonstration if necessary.
- Prepare the child for predictable loud noises such as school bell.
- Be aware of background noises such as interactive whiteboard projectors, fluorescent lights, and turn these off if possible, for some of the time.
- Reduce auditory distraction both inside and outside the room.
- Provide headphones/earplugs for the child to wear when he needs to focus on work, or in particularly noisy situations, or allow child to work in a workstation or a quiet area.
- Talk to the child and parent about use of music if this will help her focus, either soothing background music or more alerting music depending on need.

## ▶ Activities to improve auditory processing



*If a child shows a marked sensitivity to noise, a referral to a speech and language therapist or occupational therapist is recommended.*

- *Memory games* such as 'I went to the market and bought . . .'
- *Action rhymes* such as 'head shoulders, knees and toes'.

- *Repeating well-known sequences*, e.g. days of the week, months of the year, numbers. Vary this by asking which part of the sequence is out of order.
- *Feely bag games*—place a variety of objects in a bag and ask the child to find a specific item or something hard/soft/ fluffy, etc., without looking.
- *Give directions* using locations on a map.
- Before reading a story to a child, ask him to listen for a particular word, character or phrase. Then read the story to him and when the story is finished, ask him to recall and elaborate on the original question.
- *Circle games* such as ‘duck, duck goose’, ‘Hokey Cokey’.
- Gross motor games following auditory instructions, e.g. ‘Simon Says’, ‘Captain’s Coming’.
- *Play games* which involve identifying specific everyday noises from background noise, e.g. clock ticking, door closing.
- *Commercially available games* such as ‘sound lotto’.

▶ **References**



Bissell, J. (1988) *Sensory Motor Handbook a Guide to Implementing and Modifying Activities in the Classroom*. San Antonio, Texas, Therapy Skill Builders.

Chu, S. (1999) *Assessment and Treatment of Children with Developmental Perceptual Dysfunction* (course handbook, self-published). London, West London Healthcare NHS Trust.

Newton Inamura, K. (ed.) (1998) *SI for Early Intervention: a Team Approach*. San Antonio, Texas, Therapy Skill Builders.

▶ **Further reading**



See introduction to section page 5.

Evamy, B. (2003) *Auditory and Visual Discrimination Exercises—a Teacher’s Aid*. Bridlington, Yorkshire, BJE Publications; email Barbaraevamy@aol.com; available from Dyslexia Action.

Jeffries, J.A. & Jeffries, R. (2001) *Auditory Processing Activities: Materials for Clinicians and Teachers*. Perth, Western Australia, Unicom Publications.

Moseley, J. (2005) *Circle Time for Young Children*. London, Routledge.

▶ **Further resources**



**Refer to Foundation Skills**

- FS 5 Introduction to language page 101
- FS 5A Attention and listening page 103

- FS 5B Receptive language page 105
- FS 5C Expressive language page 107
- FS 5D Auditory memory page 109

*Refer to Occupational Therapy Approaches*

- OTA 8 Sensory strategies page 323

# Visual processing

## ▶ What is it?

Visual processing is a general term that refers to all those skills needed to use the visual sense. The skills include:

- Acquiring of information through the eyes—including focus, eye teaming, eye movement or tracking and awareness of periphery
- Transporting of information to the visual cortex and sharing (or integration) of visual information with other systems—such as hearing, touch and balance
- The interpretation of what we see and the use of this to promote actions

## ▶ Why is it important?

Over 80% of our learned knowledge is visual. Inefficient visual processing will seriously affect how efficiently we can interact with our surroundings and develop new memories and knowledge of the world around us.

## ▶ What are the implications?



Children with poor visual processing will find the simple act of living harder work, and will be less efficient in a range of areas, generally, for example:

- Hand-eye coordination tasks will be harder—affecting sport and movement.
- They may find it harder to recall information, or rely more heavily on verbal skills, making creativity challenging.
- At more extreme levels, they may become insecure in their surroundings due to poor spatial awareness. This can influence confidence in a whole range of ways—affecting their social interactions.

**Sensation avoiding**

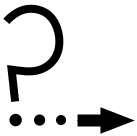
Children who avoid visual input may:

- Frequently rub their eyes
- Become distracted by lots of visual stimuli
- Dislike fluorescent lights or bright sunshine
- Prefer to work in dim lighting or dark environments
- Be unable to find what they are looking for
- Have difficulty copying from the board
- Be inconsistent writing on lines

**Sensation seeking**

Children who seek visual input may:

- Like bright lights or sunshine
- Enjoy 'busy' displays and classrooms
- Like bright colours
- Have difficulty telling the difference between similar pictures or colours
- Lose their place when reading
- Become easily fatigued with school work
- Forget spacing, or have poor spacing when writing

**Teaching strategies**

- Provide work station/privacy board so child can work in an area without visual distractions.
- Try to avoid placing the child under fluorescent light for work.
- Ensure work area is uncluttered.
- Work on an angled work surface.
- Be aware of visual distractions such as wall displays, teacher's jewellery, interactive whiteboard.
- Use visual organisers/schedules.
- Use mirror for the child to check appearance.
- Use different colours for different lines on whiteboard/interactive whiteboard.
- Use highlighters or dark pen to underline work and emphasise salient points.
- Wear sunglasses in bright sunshine.

## ▶ Activities to improve visual skills



Refer to FS 3B Vision and ocular motor control (page 63).

## ▶ References



Personal correspondence with Keith Holland.

## ▶ Further resources



### *Refer to Foundation Skills*

- FS 3A Visual motor integration page 59
- FS 4 Introduction to perception page 73

### *Refer to Occupational Therapy Approaches*

- OTA 4 Building firm foundations for handwriting page 271
- OTA 8 Sensory strategies page 323

### *Refer to Appendix*

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 10 Teacher's checklist for visual signs page 395
- A 13 Visual perception materials page 403

*Refer to Equipment Resources page 407.*



# Introduction to gross motor coordination



## What is it?

Gross motor coordination is the ability to perform large movements with fluency, accuracy and precision. In order to achieve efficient gross motor coordination, children must have developed and integrated foundation component skills. Sensory processing of information which is received and then processed through receptors in the joints, skin, eyes, ears and mouth, needs to be automatic to enable higher-level skills to develop. Gross motor movements are then dependent on coordinated and well-integrated skills that include motor planning, postural stability and balance, spatial and body awareness, bilateral integration, midline crossing and laterality.



## Why is it important?

Gross motor coordination provides the postural control necessary for the acquisition of mature gross and fine motor skills. It is essential for the development of fine manual dexterity, since controlled and coordinated large gross motor movements must be in place before smaller movements can be refined.



## What are the implications?



Children with gross motor problems may have difficulties with:

- Organising body movements, being aware of 'personal space', sitting on the carpet without causing a disturbance and getting up and down from the floor
- Changing for PE and taking part in lessons, e.g. using apparatus, music and movement sessions, drama

- Joining in playground activities and games, e.g. skipping, hula hoops, running games
- Moving around the classroom without bumping into objects or people, turn-taking and waiting in line
- Staying still, alert and focused
- Maintaining a functional working position, working on vertical surfaces, e.g. interactive whiteboard
- Opening heavy fire doors and undertaking tasks requiring stamina/standing tolerance
- Collecting and carrying equipment
- Participating in practical lessons, especially when required to use both hands together
- Maintaining stamina during extended periods of writing, producing an acceptable quantity of written work

Within this section, gross motor coordination has been broken down into:

- Motor planning
- Postural stability and balance
- Spatial and body awareness
- Bilateral integration
- Midline crossing and laterality



## References



Chu, S. (2003) *Occupational Therapy for Children with Developmental Coordination Disorder*, 5th edn (course handbook, self-published). London, Ealing Primary Care Trust.

Levin, K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.



## Further reading



See Appendix A 7 Movement programmes and gross motor resources page 381.



## Further resources



*Refer to Foundation Skills within this area*

- FS 2A, 2B, 2C, 2D, 2E within this area page 35–51

*Refer to Occupational Therapy Approaches*

- OTA 3 Building firm foundations for fine motor control—warm-up for the upper limb page 259
- OTA 8 Sensory strategies page 323
- OTA 10 Consolidating foundation skills through group activities page 333

*Refer to Appendix*

- A 1 Ages and stages of development page 361

*Refer to Equipment Resources page 407.*



## Motor planning

### ▶ What is it?

Motor planning is the first step in complex new skills, or those requiring sequencing, as it involves praxis (planning). Praxis is a unique human skill, which requires conscious thought ‘enabling the brain to conceptualise, organise and direct purposeful interaction with the physical world’ (Ayres *et al.*, 1987). It involves:

- Ideation—knowing what to do
- Motor planning/programming—knowing how to do it
- Execution—knowing how to complete it successfully

### ▶ Why is it important?

Every activity undertaken, however simple, demands motor planning, since a child needs to have an idea of the task, what it involves and then how to achieve it. Organisation, planning and then execution of new or old unpractised motor tasks are required throughout the child’s day. For good motor planning to be achieved, the brain needs essential information from all the sensory systems as well as integrating body awareness and perception of movement. It can then utilise sensory impulses to plan, organise, time and sequence an unfamiliar task.

### ▶ What are the implications?

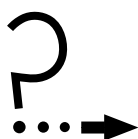


Children with motor planning problems may have difficulties with:

- Mastering a new skill—may struggle and appear clumsy, accident prone or messy
- Starting a task—cannot fathom out what to do
- Performing task—may rush, be clumsy producing messy, haphazard work
- Finishing work on time—unable to work out a strategy of completion
- Handwriting tasks—organisation of words on a line, thoughts on a page, may perform a task in a jerky or fragmented way lacking the spontaneity, which comes from sequence planning
- Practical tasks/art and craft/construction/topic work

- Manipulating equipment—using paintbrush, glue stick, scissors, ruler, compass, protractor
- Organising body movements, being aware of their ‘personal space’, sitting on the carpet without causing a disturbance, thinking up movement sequence in PE, e.g. different ways of travelling along a bench
- Self-care tasks—dressing, using cutlery, cleaning self
- Undertaking tasks requiring stamina/standing tolerance

### ▷ Teaching strategies



- Help the child to break down task, repeat instructions and record steps on paper.
- Ask what/when/where/why/how/questions to get the child to think about task.
- Provide visual cues, schedules.
- Encourage verbalisation whilst doing task, if necessary helping the child physically move through action.
- Set small achievable targets and plan method of recording when completed.
- Give one direction at a time, when task completed add another.
- Minimise visual distractions, aim for clutter free environment.
- Review rules of games before actually playing it—explain verbally as well as demonstrating.
- Mark boundaries of a game—use tape, carpet square, hoop.
- Rehearse what the child has learnt on a regular basis, give demonstration with instructions.
- Get the child to plan changes of sequence and remember and implement those changes, so that the skill becomes generalised.

### ▷ Activities to improve motor planning



- *Obstacle courses* using different positions (over, under, through), directions (clockwise, anti-clockwise, always turning right or left, forwards, backwards, sideways), postures (crawling, commando crawling, tiptoe, lying on scooter board), heights, textures (hard, soft, uneven, wobbly)
- *Stepping stones*—planning route across the room
- *Spatial orientation work*—moving through a room or obstacle course blindfolded, following instructions
- ‘*Twister*’ game/‘*Simon Says*’—imitating posture, sequence of movements
- *Playground games*—skipping, hopscotch, space hoppers, ball games
- *Maze drawings*, art and craft activities, junk modelling, origami, collage
- *Map reading*, from basic pictorial representations to OS maps
- *Cutting with scissors*, pasting into position, art projects or tasks that require assembling parts to make a whole
- *Construction tasks*—following instructions
- *Practising tying laces*, tying school tie, tying bows in aprons

## ▶ References



Ayres, A.J., Mailloux, Z.K. & Wendler C.L. (1987) Developmental dyspraxia: is it a unitary function? *Occupational Therapy Journal of Research*, 7, 93–110.

Chu, S. (2003) *Occupational Therapy for Children with Developmental Coordination Disorder*, 5th edn (course handbook, self-published). London, Ealing Primary Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

## ▶ Further reading



See introduction to section page 31.

Drew, S. (2005) *Including Children with Developmental Coordination Disorder (Dyspraxia) in the Foundation Stage*. Lutterworth, Featherstone Education Limited.

Kirby, A. & Drew, S. (2003) *Guide to Dyspraxia and Developmental Coordination Disorders*. London, Fulton.

Ripley, K. (2001) *Inclusion for Children with Dyspraxia/DCD—a Handbook for Teachers*. London, Fulton.

Ripley, K., Daines, B. & Barrett, J. (1997) *Dyspraxia—a Guide for Teachers and Parents*. London, Fulton.

## ▶ Further resources



### ***Refer to Foundation Skills***

- FS 1C Proprioceptive processing/sense page 19
- FS 2B Postural stability and balance page 39
- FS 2C Spatial and body awareness page 43
- FS 2D Bilateral integration page 47
- FS 3A Visual motor integration page 59

### ***Refer to Occupational Therapy Approaches***

- OTA 3 Building firm foundations for fine motor control—Hand gym page 263
- OTA 4 Building firm foundations for handwriting—Pre-writing patterns page 286, Multi-sensory approaches page 288
- OTA 6 Building firm foundations for dressing skills page 315
- OTA 7 Building firm foundations for scissor development page 319
- OTA 9 Self-organisation approaches page 327
- OTA 10 Consolidating foundation skills through group activities page 333

### ***Refer to Appendix***

- A 7 Movement programmes and gross motor resources page 381
- A 11 Thinking skills page 397



## Postural stability and balance

### ▶ What is it?

Postural stability is the ability to maintain and change the position of the trunk and neck so that the spine provides a stable base for positioning and movement of the extremities, while the head is maintained in the optimal position for effective visual function. Balance can be divided into static (holding a posture whilst still) and dynamic (controlling postures whilst on the move).

### ▶ Why is it important?

Good postural stability is required for efficient movement control. All gross motor movements originate from working out of a central axis or core. Stability at the pelvic and shoulder girdles (core stability) allows a wide range of movement of the arms and legs. Arm control and therefore all fine manual dexterity and stamina is greatly reduced when the trunk is not stabilised.

It provides the postural control necessary for the acquisition of mature gross and fine motor skills. It is essential for the development of fine manual dexterity, since controlled and coordinated large gross motor movements must be in place before smaller movements can be refined.

### ▶ What are the implications?

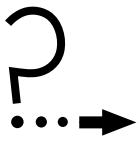


Children with postural stability and balance problems may have difficulties with:

- Hopping, skipping, jumping/moving fluently/changing direction, joining in playground games
- Walking over uneven ground/along a rope or bench/going upstairs
- Team games/bat and ball games/obstacle courses
- PE activities/working with equipment or on apparatus off the ground
- Sitting on a chair or the floor without fidgeting, slouching or falling
- Maintaining a functional working position, writing on interactive board, and having stamina for task, school day and school term
- Opening heavy doors

- Inaccuracy when building with bricks, construction tasks, stabilising equipment
- Self-care—dressing, eating, personal care, putting lunch box on high shelf, hanging up coat
- Waiting in line/maintaining personal space/not leaning on peers or furniture

### ▶ Teaching strategies



- Use visual cues, e.g. coloured mats.
- Provide chair, rather than sitting on the carpet or standing for a demonstration.
- Teach compensatory movements, e.g. fix elbows into side or rest on table when accuracy required for hand movements, eye fixing to maintain balance.
- Provide angled writing surface and wedge cushion, e.g. movin'sit cushion.
- Ensure the child has clear vision of teacher and board without moving body.

### ▶ Activities to improve postural stability and balance skills



- *Stand with one foot* on a low box to sing/clap, play throw/catch games or pick up objects from floor.
- *Work on an uneven surface*, e.g. stand on wobble board or with one foot on football to challenge child with above activities. Repeat activities standing on one leg.
- *Heel-toe walking* between two ropes or along a line forwards, backwards, sideways on floor or along a bench.
- *Stepping stones*, using coloured mats or hoops, varying size, distance and direction.
- *Hopping games* in straight line, backwards, forwards, sideways or weaving in and out of skittles/poles, balancing on different body parts, later incorporating bean bag/target games.
- *Statue game*, keeping still when signal given, or trying to stay in statue position when partner tries to move statue.
- *Activities incorporating lying on tummy* (prone extension), lying on back and bending knees to chest, (supine flexion) and turning (rotation).
- *Commando crawling*, crab walking, press ups, bunny jumps, coffee grinder.
- *Stilt walking*, scooter board games, climbing frame apparatus, adventure playground equipment.
- *Obstacle courses* incorporating different apparatus, textures, heights, directions, orientation.

## ▶ References



Chu, S. (2003) *Occupational Therapy for Children with Developmental Coordination Disorder*, 5th edn (course handbook, self-published). London, Ealing Primary Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

## ▶ Further reading



See introduction to section page 31.

## ▶ Further resources



### *Refer to Foundation Skills*

- FS 1A Vestibular processing page 11
- FS 2 Introduction to gross motor coordination page 31
- FS 2A Motor planning page 35
- FS 2C Spatial and body awareness page 43
- FS 2D Bilateral integration page 47
- FS 2E Midline crossing and laterality page 51

### *Refer to Occupational Therapy Approaches*

- OTA 4 Building firm foundations for handwriting—Ergonomics page 281
- OTA 10 Consolidating foundation skills through group activities page 333

### *Refer to Appendix*

- A 7 Movement programmes and gross motor resources page 381

*Refer to Equipment Resources page 407.*



## Spatial and body awareness

### ▷ What is it?

Spatial awareness is the ability to interpret spatial information and use it in an organised, systematic way for planning movement. It provides us with information about our environment and the relationship of one's body to an external space. Body awareness is a subconscious skill of knowing where each part of the body is and how it is moving, without relying on vision. This information is interpreted through muscles, joints and skin receptors, after which visual information can be integrated. It is reliant upon good proprioceptive, tactile and vestibular processing.

### ▷ Why is it important?

'As infants develop awareness of their ability to control their own movements and to act on the environment, they learn to perceive distance and direction between objects and their own body parts. Early spatial judgements are made using the self as reference (intra-personal space). Children gradually develop awareness of objects and external space as separate from themselves, and they apply the information learned in reference to their body to objects in extra-personal space' (Levine, 1991).

Children develop through the following stages using physical exploration and movement:

- Spatial relationships of body parts
- Judgement of size, shape and distance between body parts and objects
- Relationships between one object and other objects in space

Children with poor spatial and body awareness tend to rely heavily on visual information since they may only have a vague awareness of their position in space. They may not be able to move fluently if they cannot see their arms and legs. They may also have problems with visual attention, laterality, right/left discrimination, crossing the body midline and spatial concepts of the body (up/down, front-side-back).

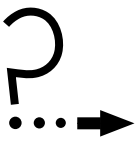
## ▶ What are the implications?



Children with spatial and body awareness problems may have difficulties with:

- Identifying, locating and recalling body parts on themselves and others
- Recognising right/left sides of their body and using right/left awareness in relation to people, objects and handwriting
- Moving in space—not bumping into people or objects, joining in PE activities, team games, running in the right direction, dance/drama improvisation, moving legs in swimming
- Self-care—clothes on correctly, buttons aligned, shoes on correct feet, wiping bottom, brushing hair, cleaning teeth, using cutlery, spreading butter on bread, pouring
- Organising themselves and their belongings
- Staying within their personal boundaries without invading another's space, safely crossing the road, judging moving traffic
- Following directions which include spatial concepts and prepositions, vertical and linear scanning, symmetry and tessellations, understanding geometry
- Handwriting—size, shape and spacing of letters, writing on a line, setting work out on a page
- Pencil and paper activities—copying pictures, drawing plans, labelling diagrams, tracking mazes
- Completing puzzles, constructing things either from a model (3D-3D) or from a picture (2D-3D)

## ▶ Teaching strategies



- Provide verbal reinforcement of position and direction.
- Teach to scan work/activity left to right, top to bottom.
- Use cue cards to help the child talk through an activity.
- Use colour coding to organise work and space.
- Concentrate on movement activities that motivate the child.
- Use carpet squares for defining sitting area.
- Use mouse mat or desk mat to define work area.

## ▶ Activities to improve spatial and body awareness



*It is essential that children move around and experience their body position in space rather than initially try to learn through doing puzzles and sedentary activities.*

- *Name and touch different body parts* with eyes open and then shut; reproduce body movements, initially copying adult, then mirrored and later following diagrams.

- ‘Simon Says’, Follow-the-leader, Twister, Dance Sacs (Lycra® bags to climb into and make shapes).
- *Body wrestling* using tactile feedback, e.g. sitting back to back with knees bent and elbows linked, try to force partner sideways onto the floor in a chosen direction.
- *Shine a torch* onto various parts of the child’s body and get them to identify where it is shining.
- *Draw round child* and make collage—use stickers to label and refer to this when child draws own picture.
- *Use body or face puzzles*, finish an incomplete drawing of a person, copy pictures of different characters.
- *Rolling on different surfaces* and textures—carpet, mat, wood, grass; weight bearing activities—carry heavy load, handprints on wall/floor, pushing down.
- *Pulling/pushing along a bench*, crawling through tunnels, bouncing on a trampette, cycle or road safety activities.
- *Obstacle courses* involving moving into, out of, through, over, under, between and around objects.
- *Target activities* with balls or bean bags, gradually reducing size of targets and increasing distance to throw/hit.

▷ **References**



Chu, S. (2003) *Occupational Therapy for Children with Developmental Coordination Disorder*, 5th edn (course handbook, self-published). London, Ealing Primary Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

▷ **Further reading**



See introduction to section page 31.

▷ **Further resources**



*Refer to appropriate Foundation Skills*

- FS 1A Vestibular processing page 11
- FS 2 Introduction to gross motor coordination page 31
- FS 2A Motor planning page 35

- FS 2D Bilateral integration page 47
- FS 2E Midline crossing and laterality page 51

*Refer to Occupational Therapy Approaches*

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 4 Building firm foundations for handwriting—Ergonomics page 281
- OTA 10 Consolidating foundation skills through group activities page 333

*Refer to Appendix*

- A 7 Movement programmes and gross motor resources page 381

*Refer to Equipment Resources page 407.*

## Bilateral integration

### ▶ What is it?

Bilateral integration is the ability to coordinate both sides of the body together, in an effective manner to accomplish an activity, enabling movements of the right and left sides as well as top and bottom to become coordinated in a skilful manner. These movements may be:

- Symmetrical (the same movements both sides of the body), e.g. star jumps
- Alternating/reciprocal (the same movements performed by one side of the body and then the other), e.g. crawling
- Performing different functions (one side of the body doing one thing and the other side doing something completely different), e.g. tying shoe laces

### ▶ Why is it important?

Bilateral integration forms the ‘foundation for the development of coordination between right and left sides of the body, mature hand dominance and effective two-handed coordination. It also contributes to the communication between the right and left sides of the brain for the development of specialisation of perceptual function and cognitive function for learning’ (Chu, 2003).

### ▶ What are the implications?

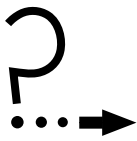


Children with bilateral integration problems may have difficulties with:

- Managing stairs using one foot after the other (reciprocal pattern)
- PE activities, apparatus work, crawling, hopping, star jumps, skipping, tug of war
- Swimming, riding a bicycle, adventure playground equipment, climbing
- Bat and ball games, throwing and catching, kicking and dribbling
- Self-care—doing up buttons, using knife and fork, tying laces, tying a tie, making a drink
- Learning and playing musical instruments

- Using scissors, doing cut and stick activities, general art and craft, topic work
- Construction tasks, puzzles, form boards, model making, paper folding
- Practical tasks—using tools and stabilising equipment, sewing, cooking, woodwork, gardening
- Pencil and paper tasks—stabilising the paper, using a stencil, ruler, protractor, templates

▷ **Teaching strategies**



- Use visual cues to mark starting and stopping position.
- Start with activities that are unilateral/ipsilateral, then progress to symmetrical, asymmetrical and alternating.
- Break down each task into small achievable stages and practise individual parts.
- Help the child to use verbal prompts/cues.
- Work with the child to pre-plan task using thinking strategies, e.g. goal, plan, do, check/stop, think, do.
- Modify the task, e.g. use curly laces rather than standard that require tying.
- Use magnetic maths equipment/ruler.

▷ **Activities to improve postural stability and balance skills**



- *Marching on the spot* or around room, eyes open/eyes shut, commando crawling, obstacle courses.
- *Jumping feet together*, star jumps—legs only then arms and legs, bunny jumps.
- *Skipping with rope*, jumping side to side across rope, hopscotch with hoops.
- *Ball games*—bouncing, throwing or catching using two hands together, kicking, dribbling.
- *Cycling*, swimming, roller-skating/blading, stilt walking.
- *Sand and water play*, pouring, filling bottles, making sandcastles, bubble blowing and clapping.
- *Art and craft activities:*
  - paper: scrunching, folding, tearing, collage, weaving, templates, stencils, sticking and glueing
  - scissor activities: cutting, making, assembling
  - painting: finger painting, shaving foam, marble painting, lino cuts, potato cuts
  - cooking: mixing, rolling, beating, stirring, spreading, cutting, pouring
  - sewing and bead work: lacing, threading, Hamma beads
  - string work: cats cradle, macramé, Scooby doos, knitting, crochet, French knitting

- woodwork: measuring and marking, sawing, sanding, hammering, assembling
- gardening: digging, planting, tending, harvesting
- *Construction activities*: model making: play dough, clay, papier mâché, using junk, art straws, pipe cleaners, puppets; lacing, threading, Lego®, K'nex, Sticklebricks, Popoids, peg boards
- *Practising using school equipment*: rulers, compass, protractor, set square, underlining
- *Commercially available games*: Jenga, Labyrinth, Bop it, speed balls, Velcro™ bat and ball, computer/Playstation® games
- *Playing musical instruments*: drums, triangle, shakers, tambourine, maracas, wind and string instruments, piano

▶ **References**



Chu, S. (2003) *Occupational Therapy for Children with Developmental Coordination Disorder*, 5th edn (course handbook, self-published). London, Ealing Primary Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

▶ **Further reading**



See introduction to section page 31.

▶ **Further resources**



***Refer to Foundation Skills***

- FS 1 Introduction to sensory processing page 5
- FS 2A Motor planning page 35
- FS 2C Spatial and body awareness page 43
- FS 2E Midline crossing and laterality page 51
- FS 3A Visual motor integration page 59
- FS 3C Manual dexterity page 69

***Refer to Occupational Therapy Approaches***

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 2 Building firm foundations for left/right awareness page 253

- OTA 3 Building firm foundations for fine motor control—Hand gym page 263
- OTA 7 Building firm foundations for scissor development page 319
- OTA 10 Consolidating foundation skills through group activities page 333

*Refer to Appendix*

- A 7 Movement programmes and gross motor resources page 381

*Refer to Resources Equipment page 407.*

## Midline crossing and laterality

### ▶ What is it?

Midline crossing is the ability to move hand, foot and eye(s) across the centre of the body. Laterality is the awareness that the body has two distinct sides and to have established a preferred dominance; right/left discrimination is an advanced form of laterality.

### ▶ Why is it important?

Midline crossing enables different activities to be performed without too much energy and effort. Children unable to cross midline may have ipsilateral hand use, preferring to use their left hand for activities on the left side of their body and their right hand for activities on the right side of their body. This is seen when a child transfers a crayon into his other hand to complete writing on the other side; as a result full functional dexterity may not develop in either hand.

### ▶ What are the implications?

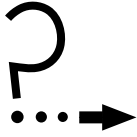


Children with midline crossing and laterality problems may have difficulties with:

- Deciding which hand to use for a task—may alternate them
- Maintaining a functional position for table top work—may tend to turn their body to avoid writing or drawing across midline; in extreme cases, they may write from the body in a forward direction, instead of left to right across the body
- Two-handed tasks, e.g. stabilising paper when writing
- Drawing people
- Handwriting—drawing diagonal lines, changing stroke direction when writing, thus impairing fluency, writing letters and numbers without some reversals
- Writing across the body from left to right, may write from the body in a forward direction or move across chair as write on page, so may fall off chair
- Practical tasks, e.g. holding and turning paper when cutting

- Following grid games, map work
- Bat and ball games, hitting across the body
- Using a knife and fork

### ▶ Teaching strategies



- Mark the page with start and stop, e.g. green dot on top left and red on top right.
- Use visual cues to indicate where the child should stand for activities, e.g. in middle of board when drawing rainbow.
- Sit the child in 'side sitting' position (knees bent and feet to one side of body) and encourage weight bearing through one arm, so the child has to use the other arm across the body.
- Check the child is sitting on the correct height chair with feet supported, use angled work surface and position paper correctly with non-dominant hand, stabilising paper on base of page.
- Position equipment and toys on opposite side of body to dominant hand and encourage the child to reach across and pick up with dominant hand.

### ▶ Activities to improve midline crossing and laterality



*NB it is essential that the child uses his eyes, hands and feet in a wide range of movements right across his body and does not compromise by swivelling his body or changing his hand*

- Draw a large rainbow on paper on the wall or floor while kneeling; in four point kneeling draw an arc around self, draw simple shapes in air or on blackboard using both hands together.
- *Eye games*—follow the beam of a torch, marbles, balls, small objects, etc., keeping body still and tracking with eyes in horizontal, vertical and circular movements.
- 'Simon Says' (using instructions that cross midline of body), hand clapping games.
- *Bean bag/ball games*—sorting bean bags from box on left to box on right (whilst in sitting or kneeling), passing beanbag around body, throwing bean bags across body (pick up with left hand to throw into container on right side), roll or bounce ball around body (keeping feet still), catch small ball in paper cone (encouraging reaching across midline).
- *French cricket*, tug-of-war, skittles (played side onto skittles) and balloon games.
- *Roll or bounce ball* around body keeping feet still.
- *Hammer games* requiring crossing the midline.
- *Tracking games*, e.g. taking a wand along a wire.

- Cross crawling and any brain gym warm ups.
- Commercially available games, such as Twister.

## ▶ References



Chu, S. (2003) *Occupational Therapy for Children with Developmental Coordination Disorder*, 5th edn (course handbook, self-published). London, Ealing Primary Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

## ▶ Further reading



See introduction to section page 407.

## ▶ Further resources



### *Refer to Foundation Skills*

- FS 1 Introduction to sensory processing page 5
- FS 2A Motor planning page 35
- FS 2B Postural stability and balance page 39
- FS 2C Spatial and body awareness page 43
- FS 2D Bilateral integration page 47
- FS 3B Vision and ocular motor control page 63

### *Refer to Occupational Therapy Approaches*

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 2 Building firm foundations for left/right awareness page 253
- OTA 3 Building firm foundations for fine motor control—Hand gym page 263
- OTA 4 Building firm foundations for handwriting—Pre-writing patterns page 286, Multi-sensory approaches page 288
- OTA 10 Consolidating foundation skills through group activities page 333

*Refer to Appendix*

- A 7 Movement programmes and gross motor resources page 381

*Refer to Equipment Resources page 407.*

# Introduction to fine motor control



## What is it?

Fine motor control, which is the ability to perform arm and hand movements with fluency and accuracy, depends not only on the control of the trunk, shoulder, arms and hands but also on ocular motor control, visual motor integration, visual perception and cognitive development. Initially, a young or immature child will use large, inaccurate movements before refining them to achieve specialised skills. ‘To control fine movements, children must be able to hold some body parts steady (stabilise) while moving others’ (Levine, 1991). Accurate reach and controlled grasp and release are all required for the development of manipulation skills.



## Why is it important?

Fine motor control facilitates participation and independence in all areas of a child’s life through play, self-care and learning.



## What are the implications?



Children with fine motor control problems may have difficulties with:

- Exploratory play
- Cutting with scissors, drawing, writing, colouring (as they use whole arm movement instead of increased control achieved from finer movements of the wrist and fingers)
- Holding and manipulating tools, e.g. scissors, pencil, paintbrush, ruler
- Pencil and paper tasks, e.g. painting, drawing, handwriting
- Using writing tools—awkward grasp, slow manipulation, reducing speed of output

- Drawing on a vertical surface—unable to move hand to make smooth up/down movements
- Turning pages of a book
- Self-care, e.g. dressing, using cutlery, hand washing, using the toilet
- Confidence—acutely aware of their lack of ability compared to their peer group; often opt out
- Frustration—give up easily, opt out, destroy games/work

Within this section, fine motor control has been broken down into:

- Visual motor integration
- Vision and ocular motor control
- Manual dexterity



## References



Chu, S. (2003) *Occupational Therapy for Children with Developmental Disorder*, 5th edn (course handbook, self-published). London, Ealing Primary Care Trust.

Erhardt, R. (1993) *Developmental Hand Dysfunction, Theory, Assessment and Treatment*. Oxford, Harcourt Assessment.

Levine, K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.



## Further reading



Benbow, M. (1992) *Neuro-kinaesthetic Approaches to Hand Function and Handwriting*, Chicago, IL, Advanced Rehabilitation Institutes.

Case Smith, J. & Pehoski, C. (1992) *Development of Hand Skills in the Child*. Bethesda, MD, American Occupational Therapy Inc.

Henderson, A. & Pehoski, C. (1995) *Hand Function in the Child—Foundations for Remediation*. St Louis, Missouri, Moseby.

Hill, M. & Hill, K. (2002) *Cutting Skills. Photocopiable Activities to Improve Scissor Technique*. Cambridge, LDA.

Hill, M. & Hill, K. (2006) *Fine Motor Skills. Photocopiable Activities to Improve Motor Control* Cambridge, LDA.

Lear, R. (1999) *Fingers and Thumbs—Toys and Activities for Children with Hand Function Problems*. Oxford, Butterworth Heinemann.

Mahoney, S. & Markwell, A. (2004) *Developing Scissor Skills—a Guide for Parents and Teachers*. Dunmow, Peta UK.

Miller Knight, J. & Gilpin Decker, M. (1994) *Hands at Work and Play. Developing Fine Motor Skills at Home and School*. Tucson, AZ, Therapy Skill Builders.



## Further resources



### *Refer to Foundation Skills*

- FS 3A, 3B, 3C within this area page 59–69
- FS 1B Tactile sense and tactile processing page 15
- FS 2D Bilateral integration page 47
- FS 2E Midline crossing and laterality page 51

### *Refer to Occupational Therapy Approaches*

- OTA 3 Building firm foundations for fine motor control page 259
- OTA 4 Building firm foundations for handwriting page 271
- OTA 5 Building firm foundations for alternative methods of recording page 305
- OTA 6 Building firm foundations for dressing skills page 315
- OTA 7 Building firm foundations for scissor development page 319
- OTA 10 Consolidating foundation skills through group activities page 333

### *Refer to Appendix*

- A 1 Ages and stages of development page 361
- A 2 Alphabet ABC sentences page 369
- A 3 Fine motor circuit page 371
- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 12 Twelve rules of legibility page 401



## Websites



- [www.abcteach.com](http://www.abcteach.com) (good certificates)
- [www.activityvillage.co.uk](http://www.activityvillage.co.uk) (lots of projects—origami/printables)
- [www.colouringbookfun.com](http://www.colouringbookfun.com) (colouring pictures)
- [www.coloringcastle.com](http://www.coloringcastle.com) (range of colouring pictures)
- [www.dltk-kids.com](http://www.dltk-kids.com) (crafts, etc.)
- [www.enchantedlearning.com](http://www.enchantedlearning.com) (lots of print outs and crafts)
- [www.everythingpreschool.com](http://www.everythingpreschool.com) (different activities)
- [www.ltscotland.org.uk/earlyyears/resources/illustrations](http://www.ltscotland.org.uk/earlyyears/resources/illustrations) (good pictures)
- [www.preschoollearners.com](http://www.preschoollearners.com) (handwriting patterns)
- [www.printables4kids.com](http://www.printables4kids.com) (printable)
- [www.under5s.co.uk](http://www.under5s.co.uk) (various information)



## Visual motor integration

### ▶ What is it?

‘Visual motor integration is the degree to which visual perception and finger-hand movements are well coordinated’ (Beery, 2004). Children translate what they see into a motor movement. Those with weak visual motor integration know what they want to do, but are unable to complete the task satisfactorily as they have difficulty producing the accuracy of movement.

### ▶ Why is it important?

Visual motor integration is an essential component for the development and refinement of all practical skills including handwriting and drawing. Efficient visual motor integration is needed to catch a ball, thread a needle, colour within boundaries, use visual guidelines for cutting or write on lines. It is important that visual motor integration is developed adequately and is therefore automatic, so that attention can be focused on the content, not the execution of the task.

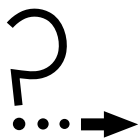
### ▶ What are the implications?



Children with visual motor integration problems may have difficulties with:

- Construction tasks, e.g. posting, jigsaws, threading, Lego®, building models
- Self-care, e.g. dressing, using cutlery
- Holding and manipulating tools, e.g. underlining with ruler, cutting along a line with scissors
- Pencil and paper tasks, e.g. tracing, colouring within lines, drawing, learning letter formation, designs needing directional changes
- Presentation—spacing, staying within lines, consistent sizing of writing
- Copying from book to paper, or board to paper
- Performing practical tasks
- Copying and reproducing shapes/designs especially when orientation, spatial placement and direction are involved
- PE, e.g. ball skills, team games, apparatus work
- Sustaining motivation for handwriting tasks

## ▷ Teaching strategies



- Break down activity into observation/planning/execution.
- Use large movements to reinforce spatial concepts, e.g. prepositions, direction, orientation.
- Simplify visual motor activities, so less accuracy is needed.
- Allow more time to complete task.
- Provide tactile, visual or auditory cues to help guide movements, e.g. increase width of line to be cut or size of space to be coloured.
- Provide verbal feedback when the child is struggling with task.
- Allow the child to focus on content of creative writing task rather than presentation.
- Consider alternative methods of recording.

## ▷ Activities to improve visual motor integration



- *Tearing/cutting/sticking* activities/paper folding/craft.
- *Graded scissor activities*—initially making small snips before cutting along lines and around shapes (see OTA 7 page 319).
- *Tracing activities*, colouring, stencil and template work.
- *Maze activities*, in shaving foam or sand before drawing on paper.
- *Imitating and copying lines*, shapes, letters and numbers using different materials, e.g. play dough, Plasticene®, lolly sticks, pipe cleaners.
- *Writing patterns* in different media before using lined paper, identify how many times child stays within line (see OTA 4 page 271), alphabet awareness work (see A 2 page 369).
- *Threading activities* starting with large equipment and progressing to smaller.
- *Peg patterns*, dot-to-dot, copying patterns drawn on square or circle grids, word searches, completing symmetry patterns and tessellations.
- *Using a torch in a darkened room* child traces over outline of door, window or pre-writing patterns drawn on board or wall.
- *PE activities*—practise throwing and catching using scarves, balloons, scratch ball, etc., target games; ask child to go to named place in the hall and complete a movement sequence, walking along a raised bench or line/pattern on the ground.
- *Introduce laptop* in conjunction with touch typing software to improve typing skills for recording work.

## ▶ References



Beery, K.B. (2004) *Developmental Test of Visual; Motor Integration, VMI*. New Jersey, USA, Modern Curriculum Press

Chu, S. (1999) *Assessment and Treatment of Children with Developmental Perceptual Dysfunction* (course handbook, self-published). London, West London Health Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

## ▶ Further reading



See introduction to section page 55.

## ▶ Further resources



### *Refer to Foundation Skills*

- FS 1B Tactile sense and tactile processing page 15
- FS 1C Proprioceptive processing/sense page 19
- FS 2A Motor planning page 35
- FS 2C Spatial and body awareness page 43
- FS 2D Bilateral integration page 47
- FS 3B Vision and ocular motor control page 63

### *Refer to Occupational Therapy Approaches*

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 2 Building firm foundations for left/right awareness page 253
- OTA 3 Building firm foundations for fine motor control—Hand gym page 263
- OTA 4 Building firm foundations for handwriting—Pre-writing patterns page 286, Multi-sensory approaches page 288
- OTA 5 Building firm foundations for alternative methods of recording page 305
- OTA 7 Building firm foundations for scissor development page 319
- OTA 10 Consolidating foundation skills through group activities page 333

*Refer to Appendix*

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 6 ICT checklist page 379
- A 10 Teacher's checklist for visual signs page 395
- A 12 Twelve rules of legibility page 401

## Vision and ocular motor control

### ▶ What is it?

Vision is the act or power of sensing with the eyes. It refers to the total system that allows an individual to see, and to experience, objects and images in space. A small part of this system is the eye; the rest includes all of the complex neurological processes that go to convert light impulse reaching the eye into a meaningful mental image of the world we are in (Holland, 1995a). To achieve ocular motor control the six muscles of each eye must coordinate effortlessly to obtain a single unified and clear image for transmission via the optic nerves to the visual cortex.

### ▶ Why is it important?

Life experiences help us acquire vision and since most of our knowledge of the world around us is obtained through vision, correct operation of the system is crucial for efficient functioning. Links between the ocular motor system and the tactile and proprioceptive systems also provide accurate spatial information to allow correct and efficient body posturing and motor control. Children need to be able to:

- Keep their head still whilst moving their eyes
- Keep their eyes still whilst moving their head
- Move both their head and eyes independently in a coordinated way whilst staying still or moving

Good ocular motor control is a precursor for developing efficient eye-hand coordination. The need to improve visual tracking and ocular motor control is frequently overlooked when trying to improve other gross and fine motor and perceptual skills.

### ▶ What are the implications?



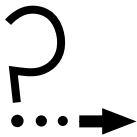
Children with ocular-motor problems may:

- Show visual stress (headaches and eye strain), discomfort, avoidance with close work; typically, however, young children prefer to avoid the task, rather than experience headaches, and this as a symptom will often not be reported

- Be fatigued, tired, lose concentration, or be distractible when working; young children, especially, show loss of attention and distractible behaviour, which can sometimes be mistaken for hyperactivity
- Screw up their eyes, squint and close or cover one eye when working; young children who appear very sensitive to bright light may well be suffering from binocular vision problems and should always be checked for this by an optometrist
- Have an abnormal posture when reading or writing, often leaning down towards the paper with a very short working distance
- Have a problem keeping place and/or line when reading unless using a marker; small children will rapidly give up if place keeping is an issue, and may become quite resistant to close work as a result
- Have difficulties with copying, either from book to paper or from board to paper
- Skip or re-read lines or words/read slowly/complain of print 'running together or jumping'/use finger or marker as a pointer
- Have difficulties drawing—orientating and spacing drawings on a page
- Demonstrate handwriting problems—poor spacing, erratic use of lines, losing place when copying, frequently omitting words, writing up or downhill on paper, fatigue quickly
- Show poor coordination and balance in games or PE—either in ball games or team games/immature ball control and poor following flight of ball/clumsiness/fall over and bump into things



### Teaching strategies



- *Visual breaks are essential* and may need to be scheduled every five minutes for some children, to reduce fatigue.
- Reduce amount of time spent on close work, intersperse practical session with close work.
- Schedule a few moments to close and relax eyes between classroom tasks.
- Alternate board activities with less visually demanding tasks.
- Keep board clean with only current information; circle/highlight word to be copied.
- Limit peripheral distractions—consider use of a workstation.
- Ensure good posture and check whether angled surface is beneficial.
- Check book/paper position to find optimum working distance (i.e. equal to the distance from the elbow to the knuckle).
- Sit facing the board to eliminate need to turn body.
- Ensure as much natural lighting as possible.
- Provide paper copy when information on board.
- Enlarge worksheets to ease focus demands.
- Use computers to reduce amount of handwriting required.
- Try using line trackers or guidelines on clear acetate to keep place in text.

- Reinforce working left to right, top to bottom when scanning and use margin as a reference point, use ruler/paper guide/sticker.
- Experiment with different coloured overlays to minimise visual stress.
- Use noisy or light-up toys to maintain visual attention and focus.



### Activities to enhance visual tracking and ocular motor control



*Initially, start gross motor activities lying down, before progressing to sitting with back supported, sitting with back unsupported, then standing with a wall close behind, before finally being able to stand in the middle of a large space.*

- *Look up, down, left and right*, with the eyes only, whilst keeping head still—possibly to the four corners of a room (ten times at the start of a lesson will stimulate simple tracking).
- *Lie under a suspended ball* that the child should be able to reach up and touch. It should be directly above the child's chest when stationary. Try to stop the swinging ball with one hand, gently poke it as it swings past, catch it, strike ball with one hand, then use a small bat until able to strike ball continuously.
- *Track moving objects* (e.g. torch, quoit, car, balloon) horizontally, vertically, diagonally and in circular directions, play 'chase' with two torches, follow marbles rolled around a large tray or down marble racer.
- Play 'swing ball', practise bouncing balloons, throw bean bags into rolling barrel, throw and catch bean bags/balls, stop a bounced power ball.
- *Write a sequence of letters, numbers, pictures, etc.*, in rows horizontally across page, get child to scan from left to right, line by line, reading or circling particular letters/numbers/pictures.
- *Draw numbers in a random order* over a blackboard/whiteboard and get child to draw a continuous line to connect them, trying to avoid head movements.
- *Read first and last letters* on every line of a page of text or the first letter of every word, to develop saccadic eye movements needed for reading.
- *Read aloud whilst moving* the material in and out and in circles, to help develop stable focus, only for a few words at a time.
- *Shift focus* between two objects placed either side by side, or at different distances away by following verbal instructions in quick succession.
- *Encourage pattern-copying*, using increasingly complex shapes to develop visual analysis skills, word searches, pattern games, e.g. Battleships, Tangrams.
- *Encourage visualisation*, e.g. day dreaming and then describe the dreams with as much sensory detail as possible.
- *Play a piece of music* and picture the scene being portrayed whilst listening with eyes closed, e.g. *Peter and the Wolf*.

## ▶ References



Holland, K. (1995a) *Visual Skills for Learning in Topic*, Spring 1995, Issue 13. London, NFER-Nelson.

Holland, K. (1995b) *Vision for Writing*, *Handwriting Review*, Vol. 9. pp. 92–98. Bicester, Oxon, Handwriting Interest Group (now National Handwriting Association).

Information taken from study day ‘Visual Factors and Occupational Therapy’ by Keith Holland, Behavioural Optometrist, 1996, and personal correspondence.

## ▶ Further reading



Wachs, H. & Frith, H. (1975) *Thinking Goes to School*. New York, Oxford University Press.

Willows, D., Kruk, R. & Corcos, E. (1993) *Visual Processes in Reading and Reading Disabilities*. London, Lawrence Earlbaum Associates.

British Association of Behavioural Optometrists—see Useful Addresses page 417.

## ▶ Further resources



*Building Auditory and Visual Perceptual Skills*. Cambridge, Learning Development Aids (LDA) out of print.

### ***Refer to Foundation Skills***

- FS 1A Vestibular processing page 11
- FS 1E Visual processing page 27
- FS 2C Spatial and body awareness page 43
- FS 2D Bilateral integration page 47
- FS 3A Visual motor integration page 59

### ***Refer to Occupational Therapy Approaches***

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 2 Building firm foundations for left/right awareness page 253
- OTA 4 Building firm foundations for handwriting page 271
- OTA 5 Building firm foundations for alternative methods of recording page 305
- OTA 7 Building firm foundations for scissor development page 319
- OTA 10 Consolidating foundation skills through group activities page 333

*Refer to Appendix*

- A 2 Alphabet ABC sentences page 369
- A 5 Handwriting programmes and fine motor resources page 375
- A 6 ICT checklist page 379
- A 7 Movement programmes and gross motor resources page 381
- A 10 Teacher's checklist for visual signs page 395
- A 12 Twelve rules of legibility page 401

*Refer to Equipment Resources page 407.*



## Manual dexterity

### ▷ What is it?

Manual dexterity is the ability to perform intricate and precise movements of the hands with fluency, accuracy and speed commensurate with developmental age. Fine manual dexterity skills mature according to recognised developmental patterns. The foundation skills necessary for mature hand function are generally considered to be in place by the time a child enters school.

Hand skills develop in sequence:

- Isolation of index finger to point
- Pinch/pincer grasp
- Tripod grasp
- Counter-balance of two sides of the hand—stabilising with ring and little finger whilst being able to move thumb, index and middle fingers
- In-hand manipulation—moving objects within the hand

### ▷ Why is it important?

Mature hand function is reliant upon precise, accurate and fluid movements of the hand. This enables a child to learn new skills and perform tasks efficiently without using excess effort.

### ▷ What are the implications?

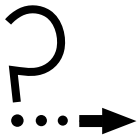


Children with manual dexterity problems may have difficulties with:

- Construction and posting tasks, e.g. Lego®, Stickle bricks, modelling, play dough
- Doing up buttons, zips, tying laces, using knife and fork, opening packaging for packed lunch, operating soap dispenser
- Grasping, releasing, pinching and manipulating objects with the fingers
- Turning objects in one hand with fingers, e.g. use both hands when needing to rotate pencil to use eraser
- Grasp—constantly shifting pencil position, awkward hold on scissors
- Pencil and paper tasks—colouring; drawing; stencils; tracing; developing pencil control when learning to form letter with neatness, fluency and speed

- Manipulating objects—using whole hand grasps and possibly two hands together instead of using refined finger grasp and movements
- Handling practical equipment—number fan, multi-link, phonics equipment, mouse, ruler, protractor, compass, set square
- Fine motor tasks requiring accuracy and precision—DT projects, science experiments, art and craft
- In-hand manipulation—picking up a number of counters one at a time and keeping hold of them in the same hand (squirrelling)

### ▷ Teaching strategies



- Allow the child to write on whiteboard, wide lined paper, raised lines or paper with minimal resistance.
- Allow the child to use alternative positions for writing (on stomach, propped on elbows) at times.
- Self-care—adapt clothing with Velcro®, allow the child to wear elasticated trousers, polo shirts, tie with elastic band; use cutlery with enlarged handles.
- Consider alternative scissors, ruler with raised ridge or handle for holding.
- Improve stability whilst completing task by using non-slip mat, magnetic tape on tools, Blu-Tack or bulldog clip to secure paper, key guard and wrist support for ICT.
- Use alternative pens or pencils that require less effort, e.g. felt tip pens, roller ball, gel pens, soft pencil, writing tool with larger barrel.
- Provide pencil grips, consider extra time for writing task and focus on legibility rather than neat presentation.
- Provide adult or peer support when task becomes frustrating.
- Differentiate work.

### ▷ Activities to improve manual dexterity



Activities need to be graded to reflect the child's developing skills. Start with larger items that require little pressure, then gradually decrease size of equipment and increase resistance to build up strength. These activities can either be done on an individual or group basis.

- *Continue to use activities* commonly seen in reception classes to consolidate and reinforce fine motor development.
- *Dressing up games*; toys and boards involving fastenings, tying laces.
- Constructional toys and games requiring increasing strength and dexterity.
- *Art and craft projects* involving tearing, scrunching, pulling, poking, pushing, threading, etc., in a variety of materials.
- *Modelling with play dough*, Plasticene®, clay—pinching, poking, rolling out, etc., using fingers and clay tools.

- *Model making* and paper folding.
- *Practise scissor skills* (see OTA 7 page 319).
- *Set up a timed circuit* of fine motor activities to encourage improvement in precision and speed (See OTA 3 Hand gym page 263).
- *Practise using equipment*, e.g. ruler, compass, protractor through art projects and games.
- *Squirrelling activities*—picking up small objects with thumb and index finger, holding them between ring and little finger whilst continuing to pick up more. See how many items can be held in the hand. Place same objects into small container one at a time.

▶ **References**



Addy, L. (2006) *Speed Up—A Kinaesthetic Programme to Develop Fluent Handwriting*. Wisbech, LDA.

Chu, S. (1998) *Assessment and Treatment of Children with Handwriting Difficulties* (course handbook, self-published). London, West London Health Care Trust.

Erhardt, R. (1993) *Developmental Hand Dysfunction, Theory, Assessment and Treatment*. Tucson, AZ, Therapy Skill Builders.

Levine K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

▶ **Further reading**



See introduction to section page 55.

▶ **Further resources**



**Refer to Foundation Skills**

- FS 1B Tactile sense and tactile processing page 15
- FS 1C Proprioceptive processing/sense page 19
- FS 2A Motor planning page 35
- FS 2B Postural stability and balance page 39
- FS 2D Bilateral integration page 47
- FS 2E Midline crossing and laterality page 51
- FS 3A Visual motor integration page 59
- FS 4 Introduction to perception page 73

***Refer to Occupational Therapy Approaches***

- OTA 3 Building firm foundations for fine motor control page 259
- OTA 4 Building firm foundations for handwriting page 271
- OTA 5 Building firm foundations for alternative methods of recording page 305
- OTA 6 Building firm foundations for dressing skills page 315
- OTA 7 Building firm foundations for scissor development page 319
- OTA 10 Consolidating foundation skills through group activities page 333

***Refer to Appendix***

- A 2 Alphabet ABC sentences page 369
- A 3 Fine motor circuit page 371
- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 6 ICT checklist page 379
- A 12 Twelve rules of legibility page 401

***Refer to Equipment Resources page 407.***

# Introduction to perception

Each of our senses opens a different aspect of the world to us. The skills that develop through the efficient use of our senses are called perceptual skills. These become the building blocks for healthy development and the foundation for our cognitive and reasoning skills. The following comes from our previous book *Occupational Therapy Approaches for Secondary Special Needs*.



## Visual perception

*Visual* perceptual skills develop from the first weeks of life through to adolescence, by which time the full range of basic skills should be consolidated. The normal developmental growth patterns of early childhood establish the essential concepts through experiences of vertical and horizontal axes, depth, speed and directional judgements, both at rest and in motion. Upon this foundation, skills in both two-dimensional (2D) and three-dimensional (3D) perception develop. Two-dimensional skills can be formally assessed in categories such as visual discrimination, visual memory, visual sequential memory, visual spatial relationships, visual figure-ground, visual form constancy and visual closure. Three-dimensional perception can also be formally assessed by tasks such as block construction, but difficulties may also be evident in functional skills such as road safety, moving smoothly through a busy environment, or packing assorted items into a school bag. Further information on visual perceptual skills is given in the following pages in this section. Occupational therapists, in conjunction with educational psychologists, are able to assess these skills.



## Tactile perception

It is easy to underestimate the importance of our *tactile* system and the problems that inadequate or distorted perceptions can cause. External stimuli such as heat or cold, light or heavy pressure, texture and pain have to be sorted and assimilated. Upon this foundation, discrimination of shape, size, weight and density develop. As the child learns to seek information by

touch, inhibition of unwanted sensory stimulation must also take place if she is not to be confused and distracted by sensory overload. For example, tactile figure-ground awareness of clothing during dressing allows her to put on her clothing comfortably, but sensory inhibition then permits her to move on to other activities undistracted by sensory arousal from her clothes.

*Proprioception* is an additional and inter-linked area of tactile perception, which relates to the awareness of the body in space. Information is gained from muscles, tendons and joints, gravitational pull and balance receptors. *Vestibular* skills relate specifically to our posture and balance mechanisms. The awareness of the body in motion is our *Kinaesthetic* sense and repetition of planned movements establishes motor memories. Visual motor activity needs to be integrated into postural balance and fluency of movement.

The stability and control we have over body posture and movement, and the control we are able to exercise in adapting to our environment, have enormous significance on our ability to learn. Occupational therapists and physiotherapists are able to assess these skills.



### Auditory perception

As with other senses, a wide range of essential skills develops through efficient integration of auditory stimulation. Figure-ground skills enable us to listen to a particular sound undistracted by background noise. Short and long-term memory is fundamental to learning. Sounds, rhythms and intonation must be discriminated, distance and direction interpreted. Correct sequencing also underpins effective communication. Speech and language therapists are able to assess auditory perceptual development, sometimes in conjunction with occupational therapists.



### Management of perceptual deficits

The benefit of a good assessment of perceptual development is that it enables *identification* of specific areas of difficulty so that therapy or educational programmes can be targeted more accurately.

Since visual perceptual skills peak during puberty, remediation is most effective *during the primary years*. Teaching should be through a multi-sensory approach, whereby children are encouraged to verbalise what they are doing, look carefully whilst undertaking the task and try to feel what their body is doing. This provides auditory, visual, tactile and kinaesthetic feedback, which in turn reinforces more efficient performance.

Within this section, visual perception has been broken down into:

- Visual discrimination
- Visual spatial relationships
- Visual form constancy

- Visual figure ground discrimination
- Visual closure
- Visual memory



### Further reading



Refer to A 13 Visual perception resources page 403.



### Further resources



#### *Refer to Foundation Skills*

- FS 4A, 4B, 4C, 4D, 4E, 4F in this section page 77–97
- FS 1E Visual processing page 27
- FS 3A Visual motor integration page 59
- FS 3B Vision and ocular motor control page 63

#### *Refer to Occupational Therapy Approaches*

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 2 Building firm foundations for left/right awareness page 253

#### *Refer to Appendix*

- A 1 Ages and stages of development page 361
- A 10 Teacher's checklist for visual signs page 395



## Visual discrimination

### ▷ What is it?

Visual discrimination is the ability to identify similarities or differences of a given shape or object. It is the first perceptual skill to develop and therefore when in place children can begin to match and sort objects by size, shape, colour, position, number and detail.

### ▷ Why is it important?

Children need this skill as it provides a foundation for all visual perceptual development. Without it, they are unable to identify objects by their features and therefore cannot make quick, accurate and refined interpretations of visual information. They may go on to have difficulties recognising numbers and letters, which may then affect their ability to read and write, since the key element of discrimination is the ability to register change.

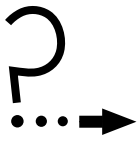
### ▷ What are the implications?



Children with discrimination problems may experience difficulty with:

- Sorting and categorising toys, puzzles, objects
- Recognising variations in size of toys, puzzle pieces, objects
- Finding similar objects regardless of size
- Spotting similarities/differences
- Completing practical tasks, e.g. jigsaw puzzles, inset trays, posting toys, construction toys
- Matching or recognising differences in numbers, letters, shapes, words or objects
- Writing may have reversals or inversions when the child is writing numbers or letters, past the age when this is normal
- Using capital letters appropriately
- Concentration, appearing inattentive and disorganised
- Changing for PE, they may be slower than their peers

## ▷ Teaching strategies



- Teach strategies to learn orientation of letters—Letterland, arrows, alphabet.
- Trace over letters using directional cues when describing letters.
- Use visual cues, e.g. making hands in shape on ‘b’, ‘d’, ‘l’.
- Encourage verbalisation whilst doing task.
- Provide clear, concise work sheets.
- Ensure concrete examples are available when further explanation is required.

## ▷ Activities to improve visual discrimination



- *Odd one out/spot the difference* games.
- *Finding and sorting activities*, categorising into sets, colours, shapes.
- *Finding shapes* in room or pictures—pick out all square, round, oblong things, etc.
- *Inset puzzles*, posting games, construction toys, bead and peg pattern.
- *Making shapes* with pipe cleaners, sticks, straws, identifying shapes drawn on child’s back and copy on paper.
- *Familiar objects game*—get the child to indicate objects that can be eaten, objects used to clean the house, objects used in the garden, etc., make up scavenger hunt using similar ideas.
- *Card games*—Happy Families, Snap, Lotto, memory pairs, picture and shape dominoes.
- *‘Feely’ games*—recognising shapes, objects, toys by feeling with eyes closed and describing them in detail (circle, square, long, short, hard, soft, thick, thin, big, little, top, middle, side, etc.).
- *Finding the same letter*, shape, object/circling designated letter, word, ending (-ed, -ing) on page, in story; use a newspaper and circle/highlight all the ‘t’s or other designated letter, a designated word such as ‘and’, the first word in every sentence, the last word in every sentence, all the double letters in various words.
- *Activities using shapes* painted on the floor or playground—moving in and out of named shapes, running, walking, hopping, jumping.

## ▷ References



Chu, S. (1999) *Assessment and Treatment of Children with Developmental Perceptual Dysfunction* (course handbook, self-published). London, West London Health Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction, Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

 **Further reading**


See A 13 Visual perceptual resources page 403.  
See introduction to section page 73.

 **Further resources**


***Refer to Foundation Skills***

- FS 4B, 4C, 4D, 4E, 4F within this section page 81–97
- FS 2C Spatial and body awareness page 43
- FS 3A Visual motor integration page 59
- FS 3B Vision and ocular motor control page 63
- FS 5A Attention and listening page 103

***Refer to Occupational Therapy Approaches***

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 2 Building firm foundations for left/right awareness page 253
- OTA 4 Building firm foundations for handwriting—Pre-writing patterns page 286, Multi-sensory approaches page 288
- OTA 10 Consolidating foundation skills through group activities page 333

***Refer to Appendix***

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 10 Teacher's checklist for visual signs page 395
- A 13 Visual perceptual resources page 403



## Visual spatial relationships

### ▶ What is it?

Visual spatial perception provides us with information about our environment and the relationship of one's body to an external space. It begins with knowing spatial concepts and where an object is in relation to oneself. Later, a child will perceive the relationship of two or more objects to themselves or each other. This will include whether an object is on top of another or underneath, in front or behind, up or down, inside or outside, etc. 'Vision needs to be combined with an interpretation of the physical environment to gain meaning from what we see' (Chu, 1999). Through the first years of life, as a child learns to sit, crawl, stand and walk, an innate awareness of vertical, horizontal and diagonal planes develops, which forms the foundation of judgements estimating size, distance and direction between objects and self.

### ▶ Why is it important?

Some children experience difficulty in appreciating and processing spatial information from their environment, which can affect their gross motor skills and classroom performance. On entering school, a child may bump into people and furniture, often finding it difficult to find adequate space when sitting beside others on the carpet. In later years, there may be problems with acquiring spatial judgements and interpreting page layout.

### ▶ What are the implications?

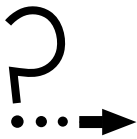


Children with visual spatial relationship problems may experience difficulty with:

- Knowing where their body is in space; often knocking over things for no apparent reason
- Moving around in classroom or playground without bumping into things or people, climbing stairs with one foot in front of the other
- Awareness of personal space, leading to problems lining up or sitting down on carpet

- PE activities when travelling through space, riding a bike, pushing a scooter and crossing a road
- Dressing—getting clothes on inside out/upside down/back to front
- Learning left/right, top/bottom in vertical and horizontal plane
- Handwriting in comparison with peer group—orientation of letters/numbers, size, shape, spacing of letters, placement on the line, messy work
- Setting out work on a page, developing mature drawing skills, copying pictures, drawing diagrams, following and keeping place on paper, board or book, copying from vertical to horizontal plane
- Playing with construction toys, constructing a model (3D-3D or 2D-3D) or drawing a diagram from a model (3D-2D)
- Sorting and organising personal belongings, keeping within personal boundaries

### ▶ Teaching strategies



- Use large movements to reinforce body awareness and spatial concepts, e.g. body parts, prepositions, direction, orientation.
- Encourage the child to experience the movement themselves before progressing to developing an understanding of position, space and placing of objects.
- Work on 3D-3D before attempting 2D-3D.
- Trace through maze or worksheet with finger before using writing tool.
- Use coloured lines and visual cues to clarify shape, size, position and placement of letters on line.
- Place green dot on top left side of page to indicate margin and where to start, place red dot on right hand side of page to indicate where to stop.

### ▶ Activities to improve visual spatial relationships



- *Outside playground* equipment/hopscotch/obstacle courses—in/under/out/through/round, walking on stepping stones, hoop games stepping through, over, jumping in/out; use carpet squares or hoops to move around or step into, e.g. musical statues.
- *Ball skills*—throwing and catching, target games, bat and ball games, kicking ball into goal, throwing bean bags into different height boxes, balloon play.
- *Blindfold games* following verbal instructions—walk forward, stop, jump right, stop, jump left, stop, jump back.
- *Orienteering*, interpreting grid references, reading a map or plan.
- *Constructional play*—making a model based on an object, peg patterns, junk modelling, jigsaws, form boards, model making (3D-3D) and (2D-3D).

- *Activity book*—colouring, mazes, dot-to-dot, complete picture, find the difference, copying a picture.
- *Multi-sensory pre-writing activities in variety of media*—paint, shaving foam, sand, cornflour.
- *Craft activities*—cutting, sticking, paper folding, threading, weaving, sewing.
- *Board games*, Connect 4, Snakes and Ladders, Draughts, ‘boxes’ drawn on a grid.
- *Games to develop form and shape*, e.g. Dime Solids, Build Up, Tangrams, symmetry, tessellations, computer games.

▷ **References**



Chu, S. (1999) *Assessment and Treatment of Children with Developmental Perceptual Dysfunction* (course handbook, self-published). London, West London Health Care Trust.

▷ **Further reading**



See A 13 Visual perception resources page 403.  
See introduction to section page 73.

▷ **Further resources**



***Refer to Foundation Skills***

- FS 4A, 4C, 4D, 4E, 4F within this section page 77–97
- FS 1 Introduction to sensory processing page 5
- FS 2C Spatial and body awareness page 43
- FS 2D Bilateral integration page 47
- FS 3A Visual motor integration page 59
- FS 3B Vision and ocular motor control page 63
- FS 6 Organisation approaches page 111

***Refer to Occupational Therapy Approaches***

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 2 Building firm foundations for left/right awareness page 253

- OTA 4 Building firm foundations for handwriting page 271
- OTA 5 Building firm foundations for alternative methods of recording page 305

*Refer to Appendix*

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 10 Teacher's checklist for visual signs page 395

## Visual form constancy

### ▶ What is it?

Visual form constancy is the ability to recognise that a shape or object remains the same despite changes in size, position, direction, orientation and distance, e.g. an object is still the same whether it is seen from the top, side or underneath.

Visual memory, visual figure ground and visual discrimination skills may all contribute to establishing form constancy. Form constancy develops from early years. It matures and refines in complex forms in association with visual closure, e.g. a continuous and increasingly complex development from 2D to 3D and depends on conceptual thought. There is considered to be a strong link between visual form constancy and visual figure ground, therefore it is advisable to work on both areas at the same time. 'Form constancy develops at about seven years of age and becomes relatively mature by eleven years' (Chu, 1999).

### ▶ Why is it important?

It enables the child to interpret the environment consistently and accurately, regardless of changes in presentation. Where constancy of shape is concerned, the child recognises that both two-dimensional and three-dimensional forms belong to certain categories of shape, regardless of their size, texture, colour, means of representation or angle from which they are seen, e.g. a cube is a cube.

### ▶ What are the implications?

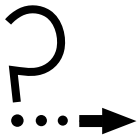


Children with form constancy problems may experience difficulty with:

- Performing age appropriate daily activities, e.g. dressing, imaginative/role play, road safety, riding tricycles/bicycles, using adventure playground equipment
- Sorting and matching objects, shapes, materials when orientation and size vary
- Construction tasks where the child is required to copy from given information

- Recognising properties of shape and being able to generalise
- Acquiring early drawing and writing skills, understanding and using upper and lower case letters, making reversals and orientating letters correctly
- Reading material written in different fonts, e.g. italic, cursive
- Changing writing styles from printed to cursive writing
- Copying from a book or board which is in a vertical plane onto paper on a desk which is orientated horizontally
- Judging height, width, depth, size, distance, orientation of an object, estimation tasks
- Practical subjects and developing concepts, e.g. maths, science, design technology, art, topic work, PE

### ▶ Teaching strategies



- Use appropriate language to describe orientation and position of an object or objects.
- Verbalise and talk through properties and orientation of objects to help the child form concept.
- Demonstrate how horizontally presented material looks when presented vertically.
- Trace letter shapes on palm or tabletop.
- Practice upper/lower case in relation to a line, e.g. 'J' and 'j'.
- Break task down into practical steps, physically exploring the properties of an object, e.g. table, box.

### ▶ Activities to improve visual form constancy



- *Practical activities*, e.g. sorting objects by shape, size, texture, colour, category or orientation (horizontal, vertical, tilted at an angle), teach same/different, differentiate between objects, upper and lower case letters and shapes with obvious differences, gradually introducing smaller differences.
- *Identify different objects* in a room, which are a given shape, e.g. everything that is square.
- *Show child an object* (lorry, brick, teddy) and get them to guess what it is when they only see the front, back, side, bottom. Order objects in relation to size, e.g. biggest to smallest.
- *Posting/threading activities*, puzzles, large construction/junk modelling investigating shapes in different orientation and size.
- *Match 2D shapes* on card with 3D objects in sorting box, make models from pictures or diagrams—(2D-3D).
- *Dressing-up games* where child has to identify clothing when its appearance varies, e.g. an upside down shoe, a helmet.

- *Obstacle courses* using the same shape in different sizes or orientation, activities to help children understand height and distance, adventure playgrounds walking on uneven ground.
- *Art and craft activities*, making/overlapping shapes in different orientations and media—potato cuts, lino cuts, finger paints, shaving foam, pipe cleaners, play dough, straws. Cut out the same shape, but in different sizes and use for collage.
- *Practise tracing*, drawing and colouring different shapes in various orientations, find geometric shapes that are reversed or rotated and match.
- *Write the same letter* or word in many different styles, colours, and size. Encourage child to underline the same word presented in many different fonts.



## References



Chu, S. (1999) *Assessment and Treatment of Children with Developmental Perceptual Dysfunction*, 8th edn (course handbook, self-published). London, West London Health Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction: Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.



## Further reading



See A 13 Visual perception resources page 403.

See introduction to section page 73.



## Further resources



### *Refer to Foundation Skills*

- FS 4A, 4B, 4D, 4E, 4F within this section page 77–97
- FS 1 Introduction to sensory processing page 5
- FS 2A Motor planning page 35
- FS 2C Spatial and body awareness page 43
- FS 3A Visual motor integration page 59
- FS 3B Vision and ocular motor control page 63

### *Refer to Occupational Therapy Approaches*

- OTA 1 Building firm foundations for spatial and body awareness page 249

- OTA 4 Building firm foundations for handwriting—Pre-writing patterns page 286, Multi-sensory approaches page 288
- OTA 6 Building firm foundations for dressing skills page 315
- OTA 10 Consolidating foundation skills through group activities page 333

*Refer to Appendix*

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 10 Teacher’s checklist for visual signs page 395

## Visual figure ground discrimination

### ▶ What is it?

Visual figure ground discrimination is the ability to identify and distinguish an object or relevant information from a background/context that contains irrelevant or distracting information. Children need to be able to visualise before looking and so this skill is dependent on their ability to form concepts. There is a strong link between visual form constancy and visual figure ground; therefore, it is advisable to work on both areas at the same time. 'Children between the ages of eight and thirteen acquire a marked refinement of figure ground ability' (Chu, 1999).

### ▶ Why is it important?

Children need to be able to discriminate objects in everyday life. On entering school, a child may be unable to find things, see things in pictures or negotiate their way around a room without stepping on things. They may frequently appear disorganised and distractible. Training in this area should help children to shift attention appropriately, concentrate on the relevant stimuli whilst ignoring irrelevant stimuli, scan adequately and have more organised behaviour.

### ▶ What are the implications?



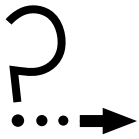
Children with figure ground discrimination problems may experience difficulty with:

- Preparing and settling into task, attending to task and concentrating when surrounded by a lot of visual stimulus
- Finding objects in tray, on table, on floor, on coat peg; finding a particular piece to build a model from a pile of construction toy materials
- Performing practical tasks, e.g. jigsaw puzzles, inset trays, posting toys, construction toys, sorting
- Colouring and tracing tasks, dot-to-dot activities, finding the hidden object
- Changing for PE, finding own kit and dressing appropriately
- Negotiating route around the classroom, playground, to and from school

- Organising themselves and their work area, laying out work on a page, finding own book from a selection of books on a table
- Keeping place when reading, completing a worksheet or copying work from book or board, scanning adequately to find required information (skim and scan skills)
- Finding details in a picture or specific place in worksheet, text, map, multiple choice test/interpreting and labelling diagrams, drawings, graphs, spreadsheets
- Noticing all the relevant words in question, identifying keywords, completing all sections in written assignments, proof reading and editing work



### Teaching strategies



- Encourage the child to visualise the named object before searching and starting task.
- Practice dressing skills, give prompts and cues to simplify tasks.
- Provide opportunities to experience moving in, on, or around equipment safely.
- Keep visual field uncluttered, provide organisation 'helps', e.g. boxes for finished work.
- Ensure desk position is free from distractions—up at front of class and near board, limit amount of items on it.
- Limit amount of information on page or board to keep work free of 'visual clutter'.
- Use tactile and visual cues—darkening/thickening lines for cutting, sticker at margin.
- Use 'windows' or 'boxes' to isolate work and provide line tracker when reading text.
- Encourage use of highlighter pen to emphasise text or important points.
- Enlarge fonts when typing and use bold, clear print, use wider lines and larger spacing when writing.
- Colour contrast when writing on whiteboard or workbook.



### Activities to improve visual figure ground discrimination



- *Finding and sorting activities* by colour, shape, size, texture, etc., 'I Spy' games.
- *Tracing and colouring*, trace or colour round a particular shape in a picture.
- *Jigsaw puzzles*, inset puzzles, posting games, construction toys, What's in a Square? mosaics, parquetry, complex cube patterns.
- *Bead and peg patterns*, lacing cards, threading activities.
- *Art and craft activities*, collage, mosaics, paint by numbers, Spiro graph.

- *Finding the same letter, shape, object/circling designated letter, word, ending (-ed, -ing) on page, in story; use a newspaper and circle/highlight all the 't's or other designated letter, a designated word such as 'and', the first word in every sentence, the last word in every sentence, all the double letters in various words.*
- *Activity books—find all the 'hidden' objects, find all the . . . , find the odd one out, find the difference/word searches, word hunts, mazes, 'Where's Wally?'*
- *Explore and talk about the content of pictures, photographs.*
- *Exploratory/imaginative play, e.g. dressing-up, playing with dolls' house, farm, home corner, sand and water play.*
- *Snakes and ladders, Monopoly®, Ludo, computer games.*

▶ **References**



Chu, S. (1999) *Assessment and Treatment of Children with Developmental Perceptual Dysfunction* (course handbook, self-published). London. West London Health Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction: Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

▶ **Further reading**



See A 13 Visual perception resources page 403.  
See introduction to section page 73.

▶ **Further resources**



**Refer to Foundation Skills**

- FS 4A, 4B, 4C, 4E, 4F within this section page 77–97
- FS 1 Introduction to sensory processing page 5
- FS 1E Visual processing page 27
- FS 2C Spatial and body awareness page 43
- FS 3A Visual motor integration page 59
- FS 3B Vision and ocular motor control page 63
- FS 6 Organisation page 111

***Refer to Occupational Therapy Approaches***

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 4 Building firm foundations for handwriting—pre-writing patterns page 286, Multi-sensory approaches page 288, Copying from board page 297
- OTA 6 Building firm foundations for dressing skills page 315
- OTA 9 Self-organisation approaches page 327
- OTA 10 Consolidating foundation skills through group activities page 333

***Refer to Appendix***

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 10 Teacher's checklist for visual signs page 395

***Refer to Equipment Resources page 407.***

## Visual closure

### ▶ What is it?

Visual closure is the ability to see ‘in the mind’s eye’ the whole of an object when part of it is hidden. It involves manipulating and transposing visual information. It allows accurate judgements to be made from familiar, but partial information. ‘Early in development the child focuses on the whole, whereas later in development he focuses on the parts, and in particular, on the parts as they make up a whole. Five-year-olds centre on one aspect of the stimulus figure, whereas generally whole-part relationships are mature in nine-year-olds (75%)’ (Chu, 1999). Visual closure is often the last visual perceptual skill to develop, as it is closely inter-linked with cognitive ability and development of concepts.

### ▶ Why is it important?

It is a foundation skill for fluency and speed in reading and spelling. Efficient reading relies on visual closure because with each fixation of the eye only some of the letters of a word or phrase are actually perceived. As a child becomes more competent in reading, her eye fixations become fewer and she must ‘fill in’ more material and encompass a wider area of print.

### ▶ What are the implications?

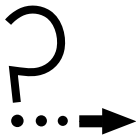


Children with visual closure problems may experience difficulty with:

- Identifying a visual object (e.g. shoe) when only part of it is visible, so it may be hard for them to find what they are looking for
- Initiating and organising unfamiliar tasks
- Putting parts together to form a whole for construction tasks, jigsaws, peg and mosaic patterns, activity books—complete the picture, dot-to-dot, what is missing?
- Visualising the completed task, given the component parts, e.g. following a recipe, assembling a construction from a picture, completing a jigsaw by searching for matching parts
- Reading and spelling fluently—may be slow as cannot recognise words or groups of words without studying every individual letter

- Acquiring sound blends and spelling patterns, putting letters together to make a word although they may be able to read the individual letters
- Precision of letter/shape formation—letters/shapes often not fully closed or spaced accurately
- Mathematical calculations, problem solving and multiplication tables, mental maths
- Work involving tessellation, symmetry and rotation of object
- Whole day planning and working within time constraints, categorising time and space, identifying whether a worksheet has been completed, or a task finished

### ▶ Teaching strategies



- Reinforce rules of letter formation to encourage accuracy.
- Emphasise the need to work from left hand margin.
- Set time limits for some tasks and record result so the child can improve.
- Increase number of pieces in puzzle as skills improve.
- Verbalise about shape/letter/number to be drawn, using directions, size and other descriptions to help create a visual picture.
- Use tactile letters to trace over and reinforce shape.

### ▶ Activities to improve visual closure



- *Dot-to-dot*, paint by numbers—ask child to identify picture as soon as the image is apparent.
- *Colouring*, stencils, finishing incomplete pictures (woman with hand missing), gradually reducing prompt.
- *Model making*—building 3D models from cubes, Lego®, K'nex, Octons, etc., copying from a picture, finishing incomplete jigsaws, mix the pieces of two puzzles together and get child to complete.
- *Matching* complete and incomplete shapes, making patterns with matchsticks, cutting out pictures and sticking them together again, making collages.
- *Drawing/writing* in variety of media—sand, cornflour, shaving foam, paint, chalk on blackboards, play dough, pipe cleaners, felt tip pens—emphasising shape, orientation; closure—make a shape/letter/number and then make another with one part missing and ask child to complete.
- *Manipulating and rotating* shapes/objects when discussing their properties—use positional referents, drawing a picture/shape/object then rotating it through 90°—drawing it upside down, highlighting lower half.

- *Transferring a design* shape from one grid to another, symmetry and tessellations—completing the other half of a picture, design.
- *Worksheets*—filling in letters to complete words or fill in words to complete sentences.
- *Covering up objects* and slowly revealing them a bit at a time. Start with familiar objects and ask child to guess before the object is totally revealed.
- *Computer*, board and pencil and paper games, e.g. Scrabble®, hangman, noughts and crosses, boxes, Tangrams.

▶ **References**



Chu, S. (1999) *Assessment and Treatment of Children with Developmental Perceptual Dysfunction* (course handbook, self-published). London, West London Health Care Trust.

Levine, K.J. (1991) *Fine Motor Dysfunction: Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

▶ **Further reading**



See A 13 Visual perception resources page 403.  
See introduction to section page 73.

▶ **Further resources**



***Refer to Foundation Skills***

- FS 4A, 4B, 4C, 4D, 4F within this section page 73–99
- FS 1 Introduction to sensory processing page 5
- FS 1D Auditory processing page 23
- FS 1E Visual processing page 27
- FS 2A Motor planning page 35
- FS 2C Spatial and body awareness page 43
- FS 3A Visual motor integration page 59
- FS 3B Vision and ocular motor control page 63

***Refer to Occupational Therapy Approaches***

- OTA 1 Building firm foundations for spatial and body awareness page 249
- OTA 6 Building firm foundations for dressing skills page 315
- OTA 9 Self-organisation approaches page 327
- OTA 10 Consolidating foundation skills through group activities page 333

***Refer to Appendix***

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 10 Teacher's checklist for visual signs page 395

## Visual memory

### ▶ What is it?

Visual/sequential memory is the ability to remember what is seen and to recall visual images of objects, shapes, symbols and movements both individually and in sequence. It is the term used to describe how memory activity processes visual information from short-term recall to long-term store. Efficient visual memory requires organised storing of information to enable rapid recall. It is dependent upon concentration and attention, good motivation, keen observation and speed.

### ▶ Why is it important?

It is a foundation skill for all learning, closely related to other forms of memory (hearing, touch and movement) and is essential for accuracy in copying tasks. The role of language in labelling and fixing a visual experience in the memory, together with the development of visual imagery and visualisation is also fundamental to achieving this skill.

The ordering of letters in words, and words in sentences, is part of the visual decoding process in reading and the encoding process in spelling. Children who are experiencing difficulties with reading and spelling may have problems with visual sequential memory.

### ▶ What are the implications?

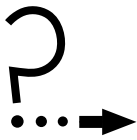


Children with visual/sequential memory problems may experience difficulty with:

- Construction toys when following a model or picture instruction, form boards, puzzles
- Daily activities, e.g. dressing, organisation of self for tasks, initiating and settling down for activity, recognising people, places and equipment
- Staying on task and finding it hard to complete work
- Learning and visualising writing patterns and letter formation
- Remembering visual sequences, pattern work and recalling information apparently learnt previously

- Sequencing pictures to tell a story, sequencing the alphabet from sight, reading and spelling
- Orientation of letters and numbers, copying information from board or book and making notes
- Maths—recalling basic shapes, number sequences, methods for problem solving and learning multiplication tables
- Remembering the sequence from a practical demonstration—maths, science, art, design technology
- Recalling and reproducing sequences of movements in PE, games, dance, often appearing one step behind peers

### ▶ Teaching strategies



- Use visual approaches to learning, e.g. look, cover, spell, check.
- Ensure visual memory is being practised and not auditory memory, when working individually with the child.
- Use memory joggers—symbols or simple drawings.
- Encourage the child to give herself verbal cues when attempting task, e.g. big blue peg, little round bead.
- Allow the child to use physical prompt (trace with finger or touch item) when appropriate.
- Use mind mapping and spidergram to aid memory.
- Use mnemonics for learning sequences/spellings

### ▶ Activities to improve visual/sequential memory



- *Practise dressing* in the correct sequence, provide visual prompts.
- *Provide visual strategy/timetable* and overview of the day, encourage child to draw pictures or mind map of day's events, ask parents to talk to child about day's events. Use home school diary to provide overview.
- *Games to encourage recall*—'Simon Says', Kim's game (with objects, letters shapes or numbers) 'I went shopping and I bought . . .', using objects, I Spy. Ask child to look out of the window and recall three things they can see. Use memory pairs, flash card Bingo, Stare game, auditory approaches for multiplication tables, e.g. rap CD.
- *Remove an object* from a room or article of clothing and ask child 'what is missing?' show a 'busy' picture and ask child to list details, ask child to describe what the person next to him is wearing.
- *Create an obstacle course* and ask child to recall/repeat layout; practise movement sequences in 'chunks'.
- *Copying patterns* with beads, bricks, pegs, Lego®, etc., change sequence and get child to replace correctly, draw and copy a repeated sequence of shapes and sequence stories.

- *Show abstract shapes* briefly and ask child to repeat pattern once it has been covered.
- *Activity books*—word searches/find the differences, highlight the word or object to be found
- *Underlining letter/number* combinations in given text.
- *Timed exercises* copying from board to paper.

▶ **References**



- Chu, S. (1999) *Assessment and Treatment of Children with Developmental Perceptual Dysfunction* (course handbook, self-published). London, West London Health Care Trust.
- Levine, K.J. (1991) *Fine Motor Dysfunction: Therapeutic Strategies in the Classroom*. Tucson, AZ, Therapy Skill Builders.

▶ **Further reading**



See A 13 Visual perception resources page 403.  
See introduction to section page 73.

▶ **Further resources**



***Refer to Foundation Skills***

- FS 4A, 4B, 4C, 4D, 4E within this section page 77–93
- FS 1D Auditory processing page 23
- FS 1E Visual processing page 27
- FS 2A Motor planning page 35
- FS 3B Vision and ocular motor control page 63

***Refer to Occupational Therapy Approaches***

- OTA 2 Building firm foundations for left/right awareness page 253
- OTA 6 Building firm foundations for dressing skills page 315
- OTA 9 Self-organisation approaches page 327
- OTA 10 Consolidating foundation skills through group activities page 333

*Refer to Appendix*

- A 4 Handwriting self-evaluation checklist page 373
- A 5 Handwriting programmes and fine motor resources page 375
- A 10 Teacher's checklist for visual signs page 395

# Introduction to language

Whilst this book predominantly focuses on developing the motor, perceptual and cognitive skills required for learning, the important role of language development in enabling a child to access the curriculum cannot be overlooked. In many children a combination of factors will contribute to the difficulties they are experiencing and therefore an overview of the main areas of language development have been included to enable a more holistic approach when supporting a child in school. If a child's difficulties are primarily speech and language-based specific advice should be sought from a speech and language therapist.

The areas covered in this section are:

- Attention and listening
- Receptive language
- Expressive language
- Auditory memory



## Further reading and resources



Consult with your local speech and language therapist.

Beales, G. (1995) *Oral Language Upper—Promoting Confidence in Speaking and Listening*. Coventry, Primary Education.

Beales, G. (1996) *Oral Language Lower—Promoting Confidence in Speaking and Listening*. Coventry, Primary Education.

Beales, G. (1996) *Oral Language Middle—Promoting Confidence in Speaking and Listening*. Coventry, Primary Education.

Edwards, J. (1998) *Look! Listen! Think!* Coventry, Primary Education.

Evamy, B. (2003) *Auditory and Visual Discrimination Exercises—a Teacher's Aid*. Bridlington, Yorkshire, BJE Publications; email BarbaraEvamy@aol.com; available from Dyslexia Association.

Frost, L. & Bondy, A. (2002) *PECS the Picture Exchange Communication System*. Brighton, Pyramid Educational Consultants; email pyramid@pecs.co.uk; www.pecs.co.uk

Mosely, J. (2005) *Circle Time for Young Children*. London, Routledge.

Pie Corbett (2006) *Speak Out! Great Ideas for Speaking and Listening. Ages 7–9*. London, A & C Black Publishers.

Pie Corbett (2006) *Speak Out! Great Ideas for Speaking and Listening. Ages 9–11*. London, A & C Black Publishers.

Warren, C. (2004) *Speaking and Listening Games: New Bright Ideas; Ages 5–11*. London, Scholastic.



## Attention and listening

### ▶ What is it?

Attention and listening is the ability to focus on sound that carries meaning.

### ▶ Why is it important?

Attention and listening skills are important prerequisites for speech and language development. Attention and listening skills are needed in all situations where the child must listen to and act in response to spoken words. Children who experience difficulties with listening do not necessarily have a hearing impairment.

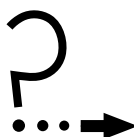
### ▶ What are the implications?



Children who have difficulties with attention and listening are likely to:

- Fidget and experience difficulty sitting still
- Appear 'naughty' because they have not listened to instructions
- Experience difficulty 'listening' and 'doing' at the same time
- Be easily distracted and distract others
- Appear to daydream
- Have difficulty maintaining eye-contact

### ▶ Teaching strategies



- Say the child's name to gain her attention before speaking to her.
- Ensure the child has stopped what she is doing to listen.
- Use visual prompts to remind the child to listen.
- Use visual material to support spoken language.
- Give instructions and information in short 'chunks' in the sequence they are to be carried out.

- Help the child to succeed with attention and listening by keeping tasks short and rewarding the child for completed tasks.
- Try to seat the child close to the teacher and remove possible distractions.
- Introduce class guidelines or rules for good listening and incorporate these into reward schemes.



### Activities to improve attention and listening



- *Ready, Steady, Go* games, especially activities in PE.
- *Music activities*, e.g. copying rhythm, guessing which instrument is being played.
- *Musical games*—musical chairs/musical statues/musical bumps.
- *Listening for a target word* in a story, and responding with agreed action, e.g. holding up corresponding object.
- *Locating sound activities*—hide an object, e.g. alarm clock or timer, in the room and ask child to listen and find it.
- *Sound lotto*, available from LDA, Duke Street, Wisbech, Cambridgeshire, PE13 2AE; Website [www.LDAlearning.com](http://www.LDAlearning.com)
- *Curriculum listening activities*, e.g. *Letters and Sounds: Principles and Practice of High Quality Phonics* (2007) DfES.
- *Developing Baseline Communication Skills*, Catherine Delamain and Jill Spring (2003) Brackley, Speech Mark Publishing Ltd.

## Receptive language

### ▶ What is it?

Receptive language is the ability to understand the content and structure of spoken language.

### ▶ Why is it important?

Children need to develop receptive language skills in order to access the curriculum successfully and to develop relationships with adults and peers. Children need to:

- Understand a range of vocabulary relevant to a variety of situations
- Be able to process information presented in the form of sentences in order to understand instructions and explanations
- Be able to relate new information learnt, to previously gained information in order to learn
- Understand how the meaning of an utterance can change according to the context and the way it is said

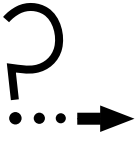
### ▶ What are the implications?



Children with receptive language difficulties may:

- Only carry out part of an instruction
- Copy the actions of children around them
- Be dominant in conversation so that they are not faced with a question or topic change which they do not understand
- Show avoidance or challenging behaviours when language levels become more complex
- Appear 'naughty' because they have not understood instructions
- 'Switch off' when information is presented verbally
- Carry out instructions in the wrong sequence because they have not understood concepts such as 'before', 'after', 'if' and 'when'
- Respond to questions with unusual answers
- Echo words used in questions and instructions without showing understanding

## ▷ Teaching strategies



- Use visual material to support spoken language.
- Give instructions and information in short 'chunks' in the sequence they are to be carried out.
- Give the child time to process spoken information.
- Use unambiguous language.
- Pre-teach important curriculum vocabulary.
- Repeat instructions in one-to-one or small group situation.

## ▷ Activities to improve receptive language



- *Derbyshire Language Scheme*—W. Knowles and M. Masidlover, Amber Valley and Erewash Area, 'Market House', Market Place, Ripley, Derbyshire DE5 3BR. [www.derbyshire-language-scheme.co.uk](http://www.derbyshire-language-scheme.co.uk)
- *Language Steps*—Amanda Armstrong (2000) STASS Publications, 44 North Rd, Ponteland, Northumberland NE20 9UR.
- *Understanding and Using Spoken Language: Games for 7–9 year olds*. Catherine Delamain and Jill Spring (2003) Brackley, Speech Mark Publishing Ltd.

## Expressive language

### ▶ What is it?

Expressive language is the ability to communicate using words and sentences.

### ▶ Why is it important?

Children need to develop expressive language skills to enable them to:

- Communicate with other people
- Express their views
- Request items to meet their needs and wants
- Reject something they do not want, like or need

Expressive language skills allow children to develop social relationships and to demonstrate their understanding of situations and curriculum material.

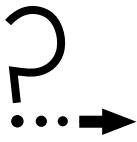
### ▶ What are the implications?



Children with expressive language difficulties may:

- Find it hard to explain their thoughts and ideas
- Be unable to express their needs and wants
- Make grammatical errors
- Use language with a 'telegrammatic' style or use short sentences
- Have difficulty thinking of specific words; children may describe words or use substitute words such as 'this', 'that', 'there'
- Become frustrated at their inability to communicate effectively
- Find it hard to participate in conversation and discussion
- Be unable to retell a story or talk about an event in the correct sequence
- Use fillers such as 'um', 'er' and learnt phrases
- Have difficulty with written language

## ▷ Teaching strategies



- Use home/school book to support child during news/circle time.
- Get teaching staff to ask targeted questions and support the child to give the answer.
- Practise using important curriculum vocabulary in sentences.
- Model correct use of language rather than correcting the child.
- Expand on the child's language by modelling how to add another word.
- Allow time for the child to formulate her response without fear of being interrupted.
- Use pictures, story boards, spider diagrams and word webs to generate ideas for creative writing and practical activities.
- Give choices if the child is experiencing difficulty thinking of a word.

## ▷ Activities to improve expressive language



- *Cambridge Language Activity File*—Sadie Bigland and Jane Speake (2000) STASS Publications, 44 North Rd, Ponteland, Northumberland NE20 9UR.
- *Derbyshire Language Scheme*—W. Knowles and M. Masidlover, Amber Valley and Erewash Area, 'Market House', Market Place, Ripley, Derbyshire DE5 3BR. [www.derbyshire-language-scheme.co.uk](http://www.derbyshire-language-scheme.co.uk)
- *Language Steps*—Amanda Armstrong (2000) STASS Publications, 44 North Rd, Ponteland, Northumberland NE20 9UR.
- *Speaking, Listening and Understanding—Games for Young Children (5–7 year olds)* Catherine Delamain and Jill Spring (2004) Brackley, Speech Mark Publishing Ltd.
- *Understanding and Using Spoken Language: Games for 7–9 year olds.* Catherine Delamain and Jill Spring (2003) Brackley, Speech Mark Publishing Ltd.
- *Speaking and Listening Through Narrative: a Pack of Activities and Ideas.* Becky Shanks and Helen Rippon (2000) Black Sheep Press, Keighley, W. Yorks. [www.blacksheep-epress.com](http://www.blacksheep-epress.com)

## Auditory memory

### ▶ What is it?

Auditory memory is the ability to remember information received in the form of sound.

### ▶ Why is it important?

Auditory memory is a vital skill in being able to remember lists of items, instructions and information when it is presented verbally without visual or kinaesthetic information. Children with auditory memory deficits may make errors that can lead to them storing inaccurate information in the long-term memory that will be accessed in the future.

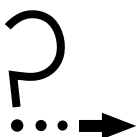
### ▶ What are the implications?



Children with auditory memory difficulties may:

- Be unable to remember a list of instructions given verbally
- Experience difficulty retaining new vocabulary
- Find it hard to rote learn information including songs and rhymes
- Find it hard to remember telephone numbers
- Be unable to retell a story or paraphrase information given verbally
- Experience difficulty understanding long sentences; children may forget information given at the beginning of the sentence, which may be referred to again at the end of the sentence
- Have difficulty using skills of prediction in stories due to poor recall of outcomes in previously encountered stories

### ▶ Teaching strategies



- Use visual material to support information presented verbally.
- Teach the child strategies, such as using fingers to represent items in a list.

- Give instructions and information in short 'chunks' in the sequence they are to be carried out.
- Repeat spoken instructions and ask the child to repeat what he has been asked to do.
- Give the child a password to remember to allow them to access an activity. As the child's skills improve increase the number of instructions.



### Activities to improve auditory memory



- 'I went to market and I bought . . .' game.
- Taking messages around school.
- Remembering a sequence of instructions in PE, music, dance.
- Remembering telephone number.
- Rote learning songs and rhymes.
- Give children a password to allow access to an activity. Increase the amount of time the word must be remembered.

# Organisation



## What is it?

Essential components of organisation are planning, body awareness and timing. Every new task involves motor planning when the brain has to conceive, organise and carry out a sequence of unfamiliar actions.



## Why are they important?

Organisational skills enable the child to function effectively in daily and learning activities.



## What are the implications?



Children with organisational problems may have difficulties with:

- Being aware of their 'personal space' when joining in gross motor activities
- Manoeuvring themselves around the classroom, participating as member of a team and being in confined spaces
- Working alongside other children or participating in a group activity
- Changing for PE and maintaining a tidy appearance, e.g. tucking in clothes after using toilet
- Getting ready for a lesson and starting work promptly, gathering belongings at the end of the day, putting letters, books, etc., into book bag
- Having the right equipment for the task, organising work area, often encroaching on others' workspace
- Following visual and/or auditory instructions for given task, particularly if a sequence of instructions are given
- Planning and organising school work
- Recording and completing homework
- Performing practical tasks
- Using ICT
- Time keeping, as forgetful and often in the wrong place at the wrong time
- Poor self-esteem and vulnerability to teasing



## Activities to improve organisation skills



OTA 1 Building firm foundations for spatial and body awareness page 249.  
 OTA 6 Building firm foundations for dressing skills page 315.  
 OTA 9 Self-organisation approaches page 327.



## References



- Benson, B., Cuff, C. & Elkin, P. (1984) *Cambridge Primary Language Level 1 Study Skills*. Cambridge, Cambridge University Press.
- Benson, B., Cuff, C. & Elkin, P. (1984) *Cambridge Primary Language Level 2 Study Skills*. Cambridge, Cambridge University Press.
- Benson, B., Cuff, C. & Elkin, P. (1984) *Cambridge Primary Language Level 3 Study Skills*. Cambridge, Cambridge University Press.
- Benson, B., Cuff, C. & Elkin, P. (1984) *Cambridge Primary Language Level 4 Study Skills*. Cambridge, Cambridge University Press.
- Davis, L., Soiroowitz, S. & Parker, H. (1996) *Study Strategies Made Easy, a Practical Plan for School Success*. Plantation, Florida, Speciality Press Inc.
- Kirby, A., Peters, L. & Baudinette, K. (2007) *Organisational Skills at Home* (Discovery series). Cardiff, Discovery Press.
- Nagleri, J. & Pickering, E. (2003) *Helping Children Learn: Intervention Handouts for use in School and at Home*. Baltimore, MD, Brookes Publishing Co.
- Stein, S. & Chowdhury, U. (2006) *Disorganised Children—a Guide for Parents and Professionals*. London, Jessica Kingsley Publishers.



## Further resources



### *Refer to Foundation Skills*

- FS 2A Motor planning page 35
- FS 2C Spatial and body awareness page 39

### *Refer to Appendix*

- A 11 Thinking skills page 397

# Social and emotional aspects



## What is it?

‘Social and emotional aspects of learning’ is one of many terms used within the school setting to describe the concept of emotional health and well-being. Other frequently used terms include social and emotional competence, emotional literacy, emotional intelligence, and social, emotional and behavioural skills.

A range of social, emotional and behavioural skills are thought to constitute the foundation blocks for emotional health and well-being, including:

- Making and sustaining friendships
- Working and playing cooperatively
- Dealing with and resolving conflict fairly
- Understanding, valuing and respecting the differences between people
- Being able to solve problems alone and with others
- Being an effective and successful learner
- Managing feelings such as anxiety, frustration, anger



## Why is it important?

Children’s emotional health and well-being can be considered as the strength and capacity of children to grow and develop with confidence those skills necessary to participate fully in all aspects of everyday life, and to recognise their own special talents. It consists of the capacity to learn from experience and to overcome difficulty (adversity).

Social, emotional and behavioural skills are considered to underpin almost every aspect of home, school and community life and are key aspects of effective learning. It is recognised that schools have a direct influence on the emotional health of children and that this in turn impacts on academic and other school achievements.

Social, emotional and behavioural skills are used to:

- Manage a range of feelings that may interfere with learning, such as frustration, sadness, disappointment, anger and anxiety

- Promote a state of mind that enable tasks to be carried out
- Manage the social and emotional components that accompany an activity

The evidence available demonstrates that by fostering children's social, emotional and behavioural skills the following are all positively affected:

- Educational and work success
- Improvements in behaviour
- Increased inclusion
- Improved learning
- Greater social cohesion
- Mental health

Weare & Gray (2003)

A primary factor in building and maintaining social, emotional and mental well-being is considered to be healthy self-esteem. Children with healthy self-esteem are more able to handle anxiety, hurt and anger in positive and constructive ways.

It is acknowledged that some children who experience delay and disorder in developing their foundation building blocks, e.g. gross motor coordination, fine motor control, may have difficulties performing school activities. Similarly, difficulties establishing social, emotional and behavioural skills may impact on the development of foundation building blocks and in turn on school performance.

Children with developmental coordination disorder, attention deficit hyperactivity disorder, autistic spectrum disorder or those with physical disabilities and sensory impairments are particularly vulnerable to associated social, emotional and behavioural problems.



### What are the implications?



Children whose social, emotional and behavioural development is of concern may experience difficulty with:

- Preparing and settling into task
- Maintaining concentration throughout task—appear off task, have excessive tiredness, daydreams and appear preoccupied
- Organisational skills—remembering information and equipment needed for an activity, wandering around class, becoming disruptive
- Listening skills—remembering instructions, attending to information, participating in activities previously enjoyed, opting out of activity
- Social skills—establishing friendships, maintaining relationships with peers, working effectively with others in groups
- Cooperating with adults and peers/coming into conflict with peers and/or adults
- Working independently, requiring adult attention and interaction
- Dealing with and resolving conflicts, emotional regulation, becoming tearful, having temper tantrums and outbursts

- Managing a range of feelings, becoming irritable and showing frustration
- Attending school regularly, refusing school

Children will often use their behaviour to show how they feel and to communicate their underlying emotional needs.



### Activities to promote social, emotional and behavioural skills



Schools promote children's development through initiatives such as circle time, self-esteem approaches, peer support programmes, mentoring and buddy schemes, and commercially available programmes for developing social, emotional and behavioural skills, such as Social and Emotional Aspects of Learning (SEAL) (DfES, 2005).

In many cases, improvements in children's behaviour will be evident through:

- *Participation in initiatives* aimed at developing self-esteem and emotional well-being
- *Developing a foundation building block*, e.g. body and spatial awareness, expressive language, which has been identified as impacting on the child's social, emotional health and well-being
- *Working in collaboration* with parents and family



### Seeking further advice and support

If feelings and behaviour causing concern continue for months, to a point where they interfere with day-to-day living, extra support may be needed. Parents, carers and school staff may need to seek advice and support from agencies such as school nurse, doctor, educational psychologist, educational welfare officer, general practitioner, primary mental health worker and social services. The Common Assessment Framework (CAF) pre-assessment checklist can assist services in deciding whether a child is in need of additional help.

A variety of services are available which provide help for children. This additional support will enable the child, family and school to find ways to help understand and deal with the feelings behind the behaviour.

Concerns indicating need for further help include:

- Excessive fatigue
- Deterioration in appearance, unkempt
- Frequent wetting or soiling, inappropriate to child's age
- Social withdrawal
- School refusal
- Depression
- Eating problems

- Anxiety
- Increase in intensity and severity of aggression
- Emotionally labile
- Putting themselves in danger, risk-taking behaviours

If concerns continue and there is further impact on the child's ability to engage in day-to-day living or there is a sudden deterioration in a child's appearance, then further advice may need to be sought from specialist services such as Child and Adolescent Mental Health Services (CAMHS). Specialist CAMHS provide a range of interventions for children where there are emotional, behavioural, relationship problems and mental health concerns.



## References



Colby-Trott, M. (2002) *Oh Behave! Sensory Processing and Behavioural Strategies*. Tucson, AZ, Therapy Skill Builders.

Cooper, P. & Tiknaz, Y. (2007) *Nurture Groups in School and at Home—Connecting with Children with Social, Emotional and Behavioural Difficulties*. London, Jessica Kingsley.

Cummins, A., Piek, J. & Dyck, M. (2005) Motor coordination, empathy and social behaviour in school-aged children. *Developmental Medicine and Child Neurology*, 47 (7), 437–42.

Department for Children, Schools and Families (2005) *Developing Children's Social, Emotional and Behavioural Skills: Guidance* (September). Department for Children, Schools and Families. Available at [www.standards.dfes.gov.uk/primary](http://www.standards.dfes.gov.uk/primary)

Department for Education and Skills (2003) *Excellence and Enjoyment: a Strategy for Primary Schools*. London, Department for Education and Skills, Crown.

Department for Education and Skills (2004) *Promoting Emotional Health and Well-being: Through the National Healthy School Standard*. London, Department for Education and Skills/Department of Health.

Department for Education and Skills (2005a) *Excellence and Enjoyment: Social and Emotional Aspects of Learning: Guidance: Primary National Strategy*. London, Department for Education and Skills, Crown.

Department for Education and Skills (2005b) *Every Child Matters: Change for Children, Aims and Outcomes*. London, Department for Education and Skills. Available at [www.everychildmatters.gov.uk/aims](http://www.everychildmatters.gov.uk/aims)

Lougher, L. (2001) *Occupational Therapy for Child and Adolescent Mental Health*. London, Harcourt Publishers Limited.

Plummer, D. (2007) *Helping Children to Build Self-esteem*. London, Jessica Kingsley.

Rae, T. (2003) *Dealing With Some More Feelings: an Emotional Literacy Curriculum*. Bristol, Lucky Duck Publishing.

The Royal College of Psychiatrists information service has produced a series of leaflets on common mental health issues for the general public. Available at [www.rcpsych.ac.uk](http://www.rcpsych.ac.uk)

Weare, K. (2000) *Developing Mental, Emotional and Social Health Needs in Schools*. London, Routledge.

Weare, K. & Gray, G. (2003) *What Works in Developing Children's Emotional and Social Competence and Well-being?* DfES Research Report 456. Southampton, The Health Education Unit, Research and Graduate School of Education, University of Southampton.

Young Minds is a national charity committed to improving the mental health of all children and young people and produces range of leaflets which can be ordered or downloaded. Available at [www.youngminds.org.uk](http://www.youngminds.org.uk)



### Further resources



#### *Refer to Foundation Skills*

- FS 1 Introduction to sensory processing page 5
- FS 2 Introduction to gross motor coordination page 31
- FS 3 Introduction to fine motor control page 55
- FS 4 Introduction to perception page 73
- F5 Introduction to language page 101

#### *Refer to Occupational Therapy Approaches*

- OTA 8 Sensory strategies page 323

#### *Refer to Appendix*

- A 9 Resources for developing social, emotional and behavioural skills page 389
- A 11 Thinking skills page 397
- A 14 Work system page 405

