

Tiverton School Curriculum Rationale

Cognitive structures that underlie acts of intelligence are a central feature of Piaget's theory: that knowledge is being developed over time.

Piaget argued that infants are born with schemes from birth which we call "reflexes" and that children's thinking develops in stages. As this cognitive development occurs then so behaviour changes.

Stage 1 -Sensorimotor stage

Children learn primarily about their environment, people and places via their senses and through motor activities:

For example:

Use of reflexes (grasping, looking - birth)

Primary circular reactions (1-4 months). They behave to satisfy need or feeling.

This is where the foundations of language/communication, have been laid.

Goal oriented behaviour (8-12 months). Trying new behaviours and actions to achieve different results.

Mental combinations (18-24 months). Begin to form mental abstractions to solve problems, communicate and choose actions

In this stage children need repetition and reinforcement activities

Stage 2- Pre-Operational Stage (age 2)

- Children begin to engage in pretend play.
- Understand identity
- Similarities and differences
- Classification
- Egocentricity

This is the stage that develops emergence of language and concrete thinking

In this stage children need Imitation games – need symbolic and pretend play

Stage 3 -Concrete Operational Stage (Around age 7)

- Problem solving abilities
- Consideration of numerous outcomes
- Categorization abilities
- Numerical abilities to perform operations
- Better spatial abilities
- Conservation (Things can look different but be the same thing- eg, numbers of items arranged differently)
- More logical but also can be rigid thinking
- Begin to understand reversibility

Stage 4 - Formal Operational Stage (About age 11)

- Children can think about abstract concepts not limited to the present or situation or person.
- Children can hypothetically deduce and reason
- Systematic, logical problem solving
- Deductive reasoning and understanding of abstract ideas.

Piaget used the term 'schemas' (cognitive patterns or categories of knowledge) which come about through organisation and categorisation to help us understand the world. New schemas build upon previous schemas and are continually adapted.

Adaptation (How children update current cognitive organisations) occurs through:

1. **Assimilation** (How new information to the child is incorporated into existing schemas)
2. **Accommodation** (How the child adapts their thinking to match this new info)

The aim being "**equilibrium**": a balance (in cognitive processes / thinking) between previous knowledge and changing behaviour for the new knowledge.

The National Curriculum is age and stage appropriate. It sets out neurotypical age related expectations and end of Key stage standards.

At Tiverton School, we have a broad spectrum of pupils with special educational needs and disabilities with cognition as a primary disability.

Our curriculum Pathway model is cognitive stage appropriate.

It is a stage appropriate curriculum which includes programmes of study, which include the development of concepts, knowledge and skills within the range of each pupil's cognitive stage.

Subject specific learning is interwoven and is also set out in ability phases. The phases allow developmental sequence and progression, in both skills and knowledge content, built over time and progress to allow stretch and challenge, up to National Curriculum age equivalent related standards.

Cognitive Skills/functions/abilities are the mental skills used in acquiring knowledge, manipulating information, reasoning and problem solving.

Cognitive skills can be considered the '**tools**' for learning.

Our curriculum pathway model teaches the skills and tools that our pupils need to be able to learn successfully. As well as learning, remembering and recalling knowledge, we



teach, repeat and practice these tools/skills for learning, so that children can go on to learn, remember and apply what they have learnt.

We know that:

- 1) Attention affects perception of stimulus
- 2) Stimuli are filtered and attended to
- 3) Attention becomes focussed on the important things
- 4) Staying focussed is 'sustained attention'.
- 5) Divided attention allows us to perform 2 or more tasks things simultaneously.

Memory is how the knowledge is encoded, stored, and later retrieved.

The process is like this:

- 1) Sensory Memory- Short term impression of a stimuli via the five senses.
- 2) Short Term Memory- the brain consciously thinking about holding the information in the moment (up to 7 items) (lost in 30 seconds)
- 3) Working Memory- the ability to hold information in your head and manipulate it mentally (compare, retain to problem solve).
- 4) Long Term Memory- Permanent storage system-the storing of information to be able to apply to behaviour.
- 5) Logical Reasoning - drawing conclusions based upon all information remembered and given past and present.

Cognitive skills matter because perception, attention, memory and logical reasoning determine how adept we are at learning.

Cognitive abilities/skills/functions are crucial to reading, writing, maths and subject specific learning. they enhance our pupils' cognitive "readiness for learning"

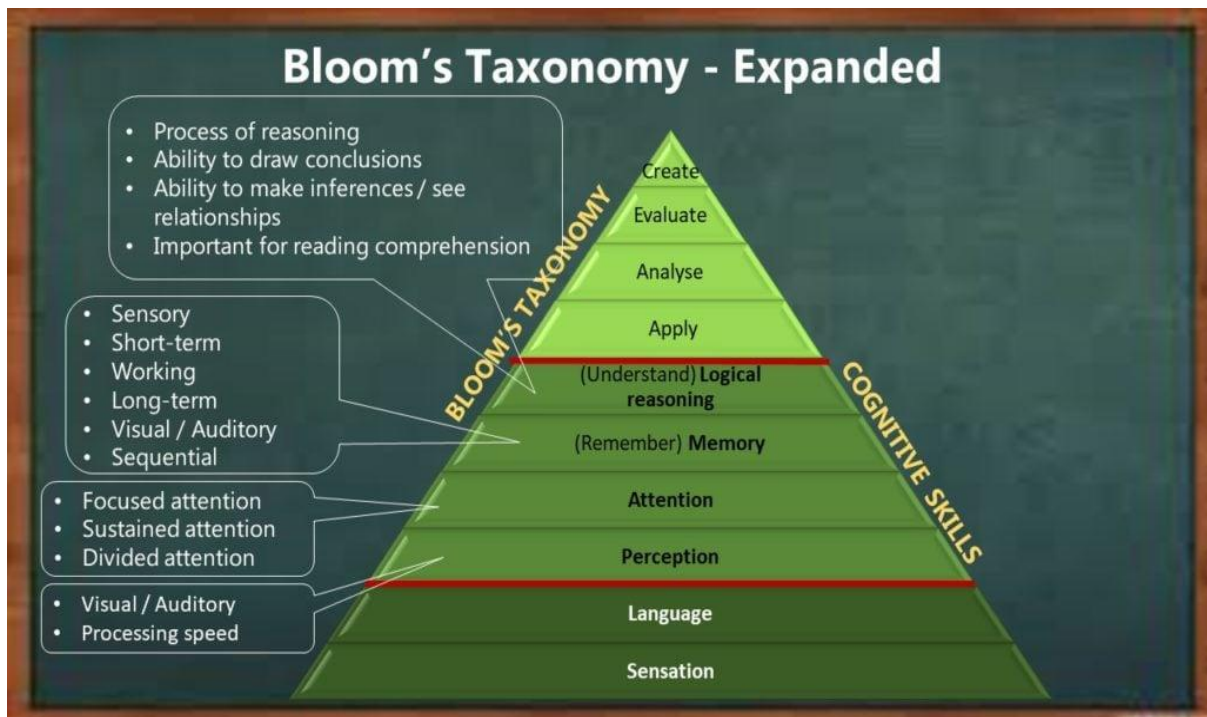
Pupils with ASD, developmental disorders, SLD and other SEND are typically impaired in the development of; attention, memory, Communication, reading, writing, maths, subject learning and logical reasoning.

Some children with ASD may remember isolated facts, for example (body temperature is 37 C or boiling point is 100 C) They may repeat information, but may not understand how it fits into their existing knowledge (the kettle heats to boiling point- 100 C) (the red tap is for hot water) or how to use that information in society, (using a kettle to make hot water) (using the hot tap to wash hands) or have the cognitive skills to apply or problem solve out of context. (boiling water from a kettle is too hot for hand washing)

Core cognitive abilities are crucial to higher order cognitive functions and learning is a structured, stratified process. Lower level cognitive skills need to be acquired first; eg, counting is a skill. The skill of counting needs to come before learning how to add and subtract.

Higher order cognitive skills go beyond basic observation of facts and "memorisation"

Blooms Taxonomy



Implementation of Curriculum Pathways and Subject Specific Programmes of Study

The teaching and learning at Tiverton School aims to be pupil centred and skills and content are taught through active discovery learning. The role of the teacher is to facilitate learning as well as teach directly.

Because Piaget's theory is based upon biological maturation and stages, the notion of "readiness" is important, ie, when children are ready to be taught certain concepts or information, at their appropriate stage of cognitive development, (knowledge building)

In order to recall and remember knowledge children need the cognitive ability to be able to use their working memory.

Working memory is the ability to store and process information and plays an essential role in children's abilities to learn literacy, maths and other curriculum areas.



Typically, stage neurotypical older children, have a greater capacity to store and process information (Working Memory)

Many pupils with SEND and/or a learning disability do not have a strong capacity in working memory, because they do not have age typical higher order cognitive skills, or readiness for learning.

The specialist curriculum pathways and strategies for teaching and learning at Tiverton School work to improve children's cognitive tools/skills/functions as well as their working memory and therefore provide them with greater foundations to learn subject knowledge across the curriculum.

Pupils at Tiverton school who have multiple and profound disabilities (PMLD) follow an **Inquisitive pathway** (based at the Stage 1 Sensorimotor stage of cognition)

Pupils with ASD follow the **Constructor Pathway** (based at the Stage 2 Pre-Operational Stage and Stage 3 Concrete Operational Stage)

They also access and learn subject specific curricular at the phase appropriate for their ability.

Pupils who have higher order cognitive skills and a more developed working memory, work on the **Investigative Pathway** (Stage 3- Concrete Operational Stage). This includes a more structured approach to the teaching of skills and concepts within discrete subjects and is assessed in line with phases within typical key stage expectation standards.

Although pupils tend to follow a Curriculum Pathway, they may access higher phases of learning within specific subject teaching, because there is flexibility dependent upon profile and cognitive ability in each subject area.