Knowledge Map: Development

This topic looks at the development of the brain and how it effects our learning. We also look at learning techniques and there bases in science and psychology.

Memory	Perception	Development	Research methods	Social influence	Language thought and communication	Brain and neuropsychology	Psychological problems

Piaget's stage theory of cognitive development	McGarrigle and Donaldson's naughty teddy study	Hughes policeman doll study	Dweck's mind-set theory	Willingham's learning theory

Piaget's theory
Logical thinking matures in stages

Piaget's theory
Changes in thinking over time.
Children think differently to adults.

Stages	Different kinds of thinking/ occur at each stage.
Schemas	Mental structures containing knowledge. Schemas become more detailed through assimilation and accommodation.
Assimilation	Adding new information to a schema.
Accommodation	New information that drastically changes a schema or a completely new schema.

Stages of cognitive development

Sensorimotor	0-2	Learn to coordinate. Develop objet permanence.
Pre-operational	2-7	Cannot think logically. Egocentric and lack conservation.
Concrete operational	7-11	Develop conservation. Logical thinking about physical objects only.
Formal operational	11+	Draw logical conclusions about abstract concepts. Inferential reasoning.

Egocentric	Conservation
Seeing the world from your own point of view.	Although appearance changes quantity remains the same.

Application in education

Readiness	Discovery	Individual	Stages
Only teaching students when they are 'biologically ready'.	Children should play an active role. Teachers should challenge schemas.	Children go through the same stages at different rates.	Sensorimotor – stimulating environment Pre-operational – Discovery Concrete operational – Physical materials Formal operation – scientific experiments

Early brain development
How the brain develops in the womb

The brain – structure and function

Brain stem	Highly developed at birth Connects the brain to the spinal cord Responsible for autonomic functions
Cerebellum	Matures much later Near the top of the spinal cord Co-ordinates sensory and motor
Thalamus	Deep inside the brain Receives and send signals around the brain.
Cortex	Very thin, pinkish grey, cover Thinking and processing Contains – visual, auditory, motor areas

Nature and Nurture

Roles	Nature refers to inherited factors Nurture refers to environmental influences
Smoking	Leads to smaller brains if mother smokes during pregnancy
Infection	German measles during pregnancy leads to hearing loss
Voices	Babies learn to recognise mothers voice and in some cases particular stories

Effects of learning on development
What makes a person work hard and in what situation?

Praise

<u>Positive effect of praise</u>
Reward. Makes us feel good so behaviour is repeated.

<u>Praise effort</u>
Praising effort enables control. Praising performance may be demotivating.

<u>Self-efficacy</u>
Understanding your own ability. Changes future success.

<u>Motivation</u>
High self-efficacy gives more effort, persistence, performance and resilience.

<u>Internal motivation</u>
Praise destroys internal motivation (Lepper)

<u>Low self-efficacy</u>
Stereotype threat lowers performance. Members of a subgroup effected by stereotypes underperform if reminded of subgroup (Steele and Aronson).

<u>Application</u>
Students criticised for effort performed better in test (Dweck)

Learning styles

Verbaliser	Focus on words. Learn by reading, listening or talking.
Visualizer	Focus on spatial relationships. Learn by using diagrams, mind maps or graphs.
Kinaesthetic learners	Focus on active participation. Learn by making things, physical activities etc.

Learning in the correct style should improve performance.

There is no evidence that learning in the correct style improves performance.

There are now over 70 learning styles meaning it is impossible to match every learner with their exact style (Coffield).