The Sensori-Motor Stage

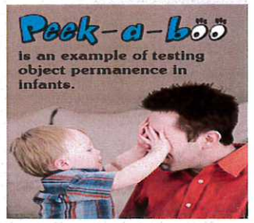
The sensorimotor occurs from a child's birth to when they are about 2 years old. During this stage a babies thoughts and behaviours are generally the same. The babies spend their time examining their surroundings and placing objects into schemas in their mind. The baby also gradually learns to make some sense of the information coming through the senses.

Features of the sensori motor stage:

1)Body schema- the infant realizes that it exists physically (e.g. it can recognise itself in a photograph or mirror.

2)Motor co-ordination- The infant learns to coordinate different body parts (e.g. hand to mouth for eating, learning to move hands and knees for crawling.

3)Object permanence- The infant knows that the object or person still exists even if it cannot be seen. When a new-born baby cannot see that thing or person, they do not exist for them anymore. Towards the end of the first year, however, perhaps as early as eight months, babies will look for hidden objects because they have developed object permanence. Piaget investigated his own children's lack of object permanence by hiding an object under a cover. At the age of under eight months the children would not look for the toy as they believed it no longer existed. However, once the baby reached nine months they became upset and would look for the toy under the cushion.



The pre-operational stage

This
stage occurs form the ages of about 2-7 years. At this stage, during which the child starts school, cognitive development gets better by the year. For example, children learn to use symbols, such as words, or mental images, to solve problems. Real thinking is beginning to happen. However, there are still some things a child cannot get right or cannot yet do. This includes:

1)Animism- Children at this stage treat inanimate objects as if they are alive too just like themselves.

2)Reversibility- A child at this stage is unable to work backwards in their thinking. Four example, four-year-old Holly is asked 'Do you have a sister?' to which she replies 'Yes Sally' But when she is asked 'Does Sally have a sister she replies 'No'

3) Egocentrism- This means seeing and thinking of the world only in your point of view. A child entering the pre-operational stage sees things through their own eyes and has real difficulty in appreciating someone else's viewpoint. The child cannot put themselves in someone else shows and see the situation form their viewpoint. Piaget demonstrated this with the Three Mountains experiment.

At the end of the pre-operational stage, as children move into the concrete operational stage, their egocentrism is no longer active in their thinking.

The Concrete Operational Stage

This is called de-centring. De-centration means that a child understands more than one feature of a situation or object.

The concrete operational stage is from about 7-11 years old. A key idea in Piaget's theory is that at every new stage the mistakes or shortcomings from the previous stages are removed. So, at the concrete operational stage the growing child: Overcomes egocentrism, drops animism, and now can think backward.

During this stage, they also develop new cognitive skills such as:

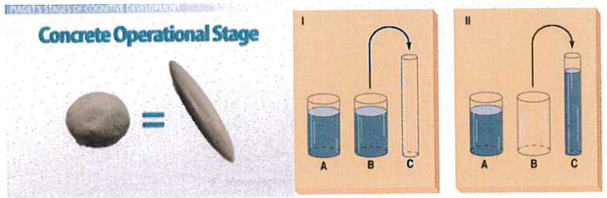
1)Linguistic humour- When children start understanding and enjoying word games and double meanings. Children at this stage will giggle and ask the same people the same question time after time.

2)Seriation- the ability to put things into rank order (e.g. from smallest to biggest, youngest to oldest).

3)Conservation- When children know that certain properties of certain objects remain the same (are conserved) even if the objects appear to change. Children at the pre-operational stage don't manage to hold on to or conserve what they see if something appears to have changed in some way. Piaget devised several new procedures or games to test a children and conservation. Piaget did a test with water in a beaker and also with plasticine when it was in a ball then flattened.

Piaget's Conservation Task

The reason why Piaget called this stage the Concrete Operational Stage was because children can conserve and order things provided that the objects are present or 'concrete' (e.g. can be seen or held). They begin to be able to solve problems but only concrete or practical ones. They still don't do abstract thinking-they are not old enough to reason in their heads.



The Formal Operational Stage

By this stage adolescents develop the new lifelong ability to think about, and solve, sophisticated abstract problems. Piaget believed that it is during this stage that adolescents develop thinking and reasoning typical of adults at their best. They also began to have more grown-up thinking which is thinking without physical prompts or objects. This is known as hypothetical thinking. This involves solving problems logically and perhaps scientifically, and thinking in an abstract way. They can also develop general principles that they can apply to other situations.

Criticisms of Piaget's Theory

- The cognitive stages are not as fixed or rigid as Piaget proposed.
- There is no guarantee that people develop through all the stages.
- Development is not an automatic biological process.
- Piaget ignored different kinds of thinking.

PIAGET'S STAGES of cognitive development

Sensori-motor

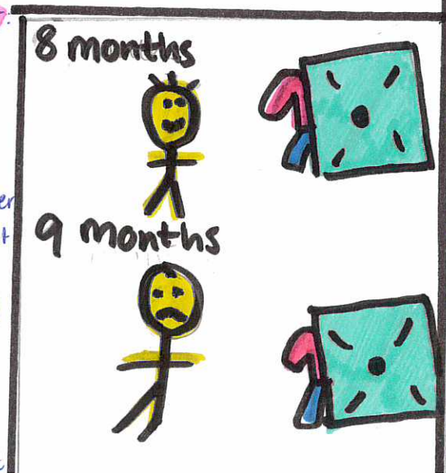
In babies, thoughts and feelings and also behaviour are generally the same. Babies examine their surroundings and place objects based on senses. (squeeze, shaking, sucking, banging, twisting etc.) Years 0-2

Body Schema - The infant gains recognition of it's physical self (mirror)

Motor co-ordination - The infant learns to co-ordinate different bodies parts (hand to mouth when eating.)

Object permanance - The infant knows an object/person still exists even when they can't see it/them.

EXPERIMENT:
Hiding toys under something. Under eight months they did no bother to search but by nine months, they got upset by the missing toy and looked under the cushion for it



Pre-Operational

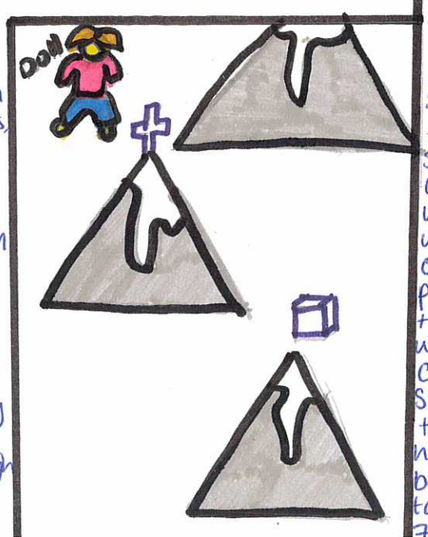
This is from the age of 2-7 and it's when the children start school and learn to use symbols, mental images to solve problems. Real thinking is beginning to happen, but the following limitations exist.

Animism - Treat inanimate objects (like toys) as if they were alive and talk and understand them.

Reversibility - The infant cannot work backwards in their thinking.

Egocentrism - They see and think of the world only through their own view. They have difficulty in seeing things through someone else's point of view.

EXPERIMENT
The child had to choose, from 10 picture cards, the one which showed what the doll could see. Most children under 7 chose the card of the mountain that matched what they could see themselves. They could only see the scene through their own eyes - egocentrism.



Concrete-Operational

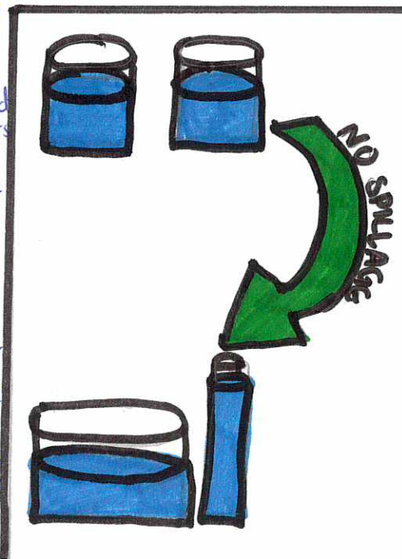
This is from the age of 7-11 and when shortcomings are removed including egocentrism, animism and reversibility. The new cognitive skills that consist of:

Linguistic humour - The child enjoys word games and double meanings. They giggle and ask people the same question over and over again.

Seriation - the ability to think in rank order.

Conservation - Children know the properties of certain objects remain the same even if they appear to change.

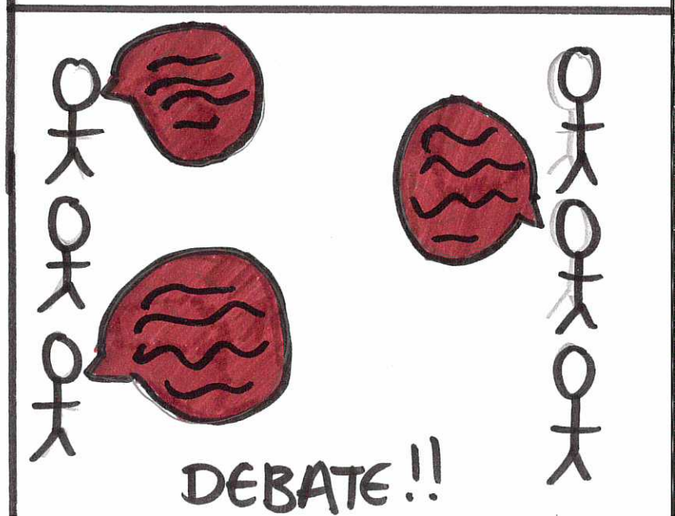
EXPERIMENT:
A child had to look at two identically sized short, fat beakers filled with the same levels of water, then watching the water from one of the beakers poured into a tall, thin beaker without spillage. Children under 7 said that the tall beaker now held more water because it was taller, those over 7 did not.

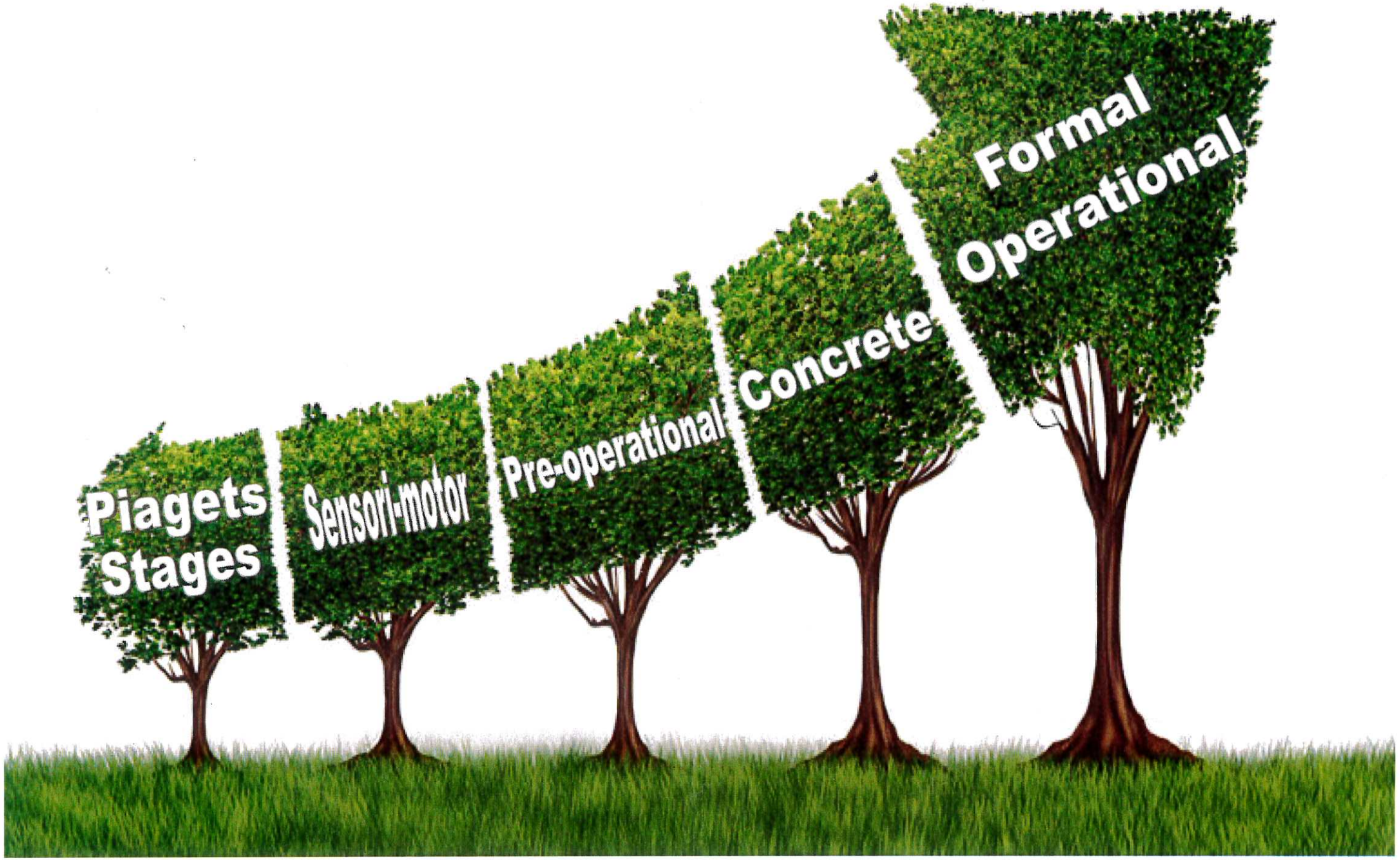


Formal-Operational

This stage is from the age 11+ where the child will have developed new lifelong ability to think about and solve sophisicated abstract problems. For example: the ability to compare theories of climate change or the extinction of the dinosaurs.
This kind of "grown-up thinking", thinking with prompts or objects is known as hypothetical thinking. This allows them to see the "big picture" and develop general principles that can be applied to other situations.

EXPERIMENT
Some of the big issues discussed in school such as debates about abortion or euthanasia.)




Piagets Stages
Sensori-motor
Pre-operational
Concrete
Formal Operational

The Sensorimotor Stage: During this stage, infants and toddlers acquire knowledge through sensory experiences and manipulating objects. It was his observations of his daughter and nephew that heavily influenced his conception of this stage. At this point in development, a child's intelligence consists of their basic motor and sensory explorations of the world. Piaget believed that developing object permanence or object constancy, the understanding that objects continue to exist even when they cannot be seen, was an important element at this point of development. By learning that objects are separate and distinct entities and that they have an existence of their own outside of individual perception, children are then able to begin to attach names and words to objects.

The Preoperational Stage: At this stage, kids learn through pretend play but still struggle with logic and taking the point of view of other people. They also often struggle with understanding the ideal of constancy. For example, a researcher might take a lump of clay, divide it into two equal pieces, and then give a child the choice between two pieces of clay to play with. One piece of clay is rolled into a compact ball while the other is smashed into a flat pancake shape. Since the flat shape *looks* larger, the preoperational child will likely choose that piece even though the two pieces are exactly the same size.

The Concrete Operational Stage: Kids at this point of development begin to think more logically, but their thinking can also be very rigid. They tend to struggle with abstract and hypothetical concepts. At this point, children also become less egocentric and begin to think about how other people might think and feel. Kids in the concrete operational stage also begin to understand that their thoughts are unique to them and that not everyone else necessarily shares their thoughts, feelings, and opinions.

The Formal Operational Stage: The final stage of Piaget's theory involves an increase in logic, the ability to use deductive reasoning, and an understanding of abstract ideas. At this point, people become capable of seeing multiple potential solutions to problems and think more scientifically about the world around them

Schemas - Schemas are categories of knowledge that help us to interpret and understand the world.

Assimilation - The process of taking in new information into our already existing schemas is known as assimilation. .

Accommodation - Accommodation involves modifying existing schemas, or ideas, as a result of new information or new experiences. New schemas may also be developed during this process.

Equilibration - As children progress through the stages of cognitive development, it is important to maintain a balance between applying previous knowledge (assimilation) and changing behaviour to account for new knowledge (accommodation). Equilibration helps explain how children can move from one stage of thought into the next.

Julz Grey

Piaget's Influence on Education

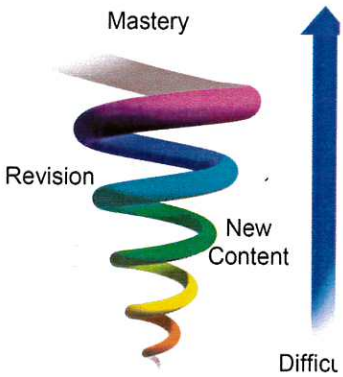
1) The concept of readiness- It argues that children can only learn what their current cognitive stage allows them to. So classroom materials, subject specifications and ways of learning in class should match the stage and cognitive level of the pupil. Young children, for example, should learn in the classroom through concrete activities and materials; older students should learn by dealing with abstract concepts and hypothetical issues. Young children do things to learn while older children have discussions and debates and carry out website research, and all this matches their cognitive development stages.

2) Discovery learning- Piaget's theory's seemed to suggest that learning should be child centred and active. Children learn best by doing. In such a system of schooling the role of teachers is not to pour knowledge down the throats of the pupils but instead to raise questions and activities for the children to get involved in. By doing this they want children to discover things for themselves first hand. The teacher is a facilitator, helping the child find things and learn independently.

3) Peer Support- In Piaget's theory this means allowing children in class opportunities for unstructured discussion and collaborative learning. It helps the child de-centre and develop the ability to take the other persons point of view.

Vygotsky's Influence on Education

1) Role of the teacher- Vygotsky disagreed with Piaget and his strict idea of readiness and letting it all happen in due time. He argued that the classroom teacher should actively intervene, to help the child as a learner develop their understanding and knowledge. For Vygotsky, this intervention plays a vital part in children's learning experience. The teacher is at the time the main person in their pupils' zones of proximal development.



2) The spiral curriculum- Vygotsky argued that children are best served in school by what he called the spiral curriculum. This means difficult ideas being presented at first quite simply, and then being revisited at a more advanced level later on.

3) Applying the notion of scaffolding to the classroom- Vygotsky had argued that other people can advance a child's support by providing a support framework or scaffold on which they child can climb and achieve

Piaget's Influences on Education

The Concept of Readiness

This is that children can only learn what their current cognitive stage allows. So the class materials and subject specification should match this. For example, young children should learn through concrete activity's and materials. Older children should learn through solving and contemplating abstract problems.

Peer support

Allowing children to have unstructured discussions and collaborative learning in class. It helps children to de-centre.

Discovery learning

Children's learning should be child-cantered and active. In schooling teachers are to raise questions, issues and devise activities to involve children in. this enables them to discover as young 'scientists'. teachers are facilitators, helping a child find and discover things.

Vygotsky's Influences on Education

Role of the Teacher

Vygotsky disagrees with readiness. He instead believed that the teacher should intervene, to help the child develop their understanding and knowledge as a learner. This intervention, Vygotsky says, plays a vital part in children's learning experience as the teacher is (at the time) the main person in their purples zones of proximal development.

The Spiral curriculum

Vygotsky argues that the spiral curriculum is best for children in schools. The spiral curriculum is an idea first being presented simply and then later being revisited at a more advanced level.

Applying the Notion of Scaffolding to the Classroom

Other people can advance a childes development by providing a support framework (scaffold) on which a child can climb and achieve.

Hollie Dawson.

Applications of Research into Cognitive Development: Educating Children.

Piaget's influence on education.

1. **The concept of readiness:** It argues that children can only learn what their current cognitive stage allows them to. This means that ways of learning should be matched to a pupils cognitive stage. For example, young children should learn in the classroom through concrete activities (learning through doing) whereas older children should learn by dealing with abstract problems (learning through discussions and debates).

2. **Discovery learning:** Piaget's theory suggests that learning should be child-centred and active. This is because children learn best by doing. In schooling the role of the teacher is to not overload children with knowledge but instead to raise questions and issues that children engage themselves in. This means that children are able to discover as young "scientists" first hand. The teacher is a facilitator, helping the child reach independency.

3. **Peer support:** Piaget's theory means allowing children opportunities for unstructured conversations and collaborative learning. This helps children de-centre and develop the ability to perceive in the views of others.

Vygotsky's influence on education.

1. **Role of the teacher:** Vygotsky disagreed with Piaget and argued that the classroom teacher should actively intervene to help the child develop understanding and knowledge. Vygotsky believed this intervention played a vital part in children's learning experience. This is because at the time a teacher is a main person in their pupils zones of proximal development.

2. **The spiral curriculum:** Vygotsky believed that children are served best by what he called a spiral curriculum. This means that difficult ideas being presented simply at first and more advanced later on.

3. **Apply the notion of scaffolding to the classroom:** Vygotsky argued that other people could advance a child's thinking by providing scaffolding (a support system) which a child can climb and achieve.

Sarah Ngochinya

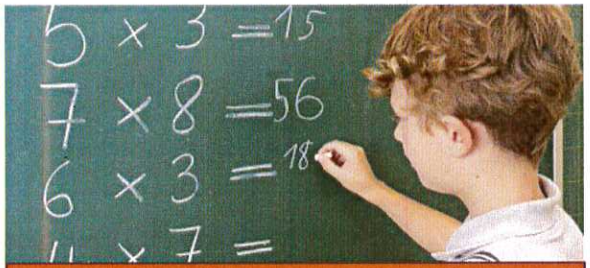
Vygotsky's influence on education

Role of the Teacher

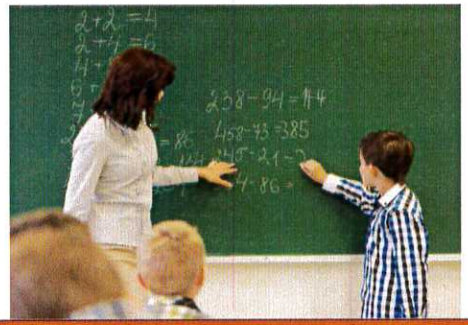
Vygotsky disagreed with Piaget and his idea of readiness saying that it is strict, and instead suggests that a child's learning should happen in due time. He argued that the teacher in the classroom should actively intervene to help the child as a learner develop their knowledge and understanding, as the intervention plays a vital part in the child's learning experience. At that time the teacher is the main person in the child's zone of proximal development.

The Spiral Curriculum

Vygotsky argued that children best learn through the spiral curriculum in class. This means that an idea that is difficult for the child is first presented in simpler terms and then revisited at a later time at a more advanced level.



Child starting off in maths with simple questions.



Child then aided with more complex questions at a later time.

Applying the notion of Scaffolding to the classroom

Vygotsky had also argued that other people can help to advance a child's learning through a support framework on which a child can climb and achieve on. (Scaffolding).

Children are given building blocks to play with.

Parent helping the child safely learn how to build towers with the building blocks.

Sarah Ngochinya

Piaget's influence on education

The Concept of Readiness

This concept suggest that children can only learn what the stage if their cognitive development allows them to do. So, classroom materials, ways of learning and subject specifications should match the pupil's cognitive level. For example, young children should learn through concrete materials and activities while older children should be learning through solving abstract concepts as well as hypothetical issues. The younger children will do things to learn while the older ones carry out debates and discussions to all match their cognitive development stages.

Discovery learning

Piaget's suggestions were that learning should be active for a child and child-centred, as they learn best by doing things. In the school system it means teachers should not force knowledge onto children, but engage them in activities, raise questions and issues for the children to get involved in. As 'scientists' the children should discover things for themselves at first hand. The teacher is a facilitator to help the child find things and learn independently.

Teacher involving students in an activity after raising a question for the issue they have to solve.

Peer support

In Piaget's theory it means allowing a child to learn through class opportunities for unstructured discussion as well as collaborative learning. It helps the child to develop the ability to see things in the point of view of others and therefore eventually de-centre.

Children involved in an unstructured discussion and working collaboratively with one another to help them to de-centre.