

Training module 4 Day 1

Session notes for IQTE trainers



Training module 4

Day 1

Session notes for IQTE trainers



| Day 1 | Day 2 | Day 3 |
|--|--|---|
| Session 1: 9.30—10.30am Reconnecting/ Sharing experiences | Session 1: 9.30—10.30am Group work | Session 1: 9.30—10.30am Classroom management |
| Session 2: 10.30—11.30am Brain development | Session 2: 10.30—11.30am Group work/ Teaching Maths | Session 2: 10.30—11.30am Teaching practice |
| Tea break 11.30—12pm | Tea break 11.30—12pm | Tea break 11.30—12pm |
| Session 3: 12—1pm Brain development | Session 3: 12—1pm Teaching Maths | Session 3: 12—1pm Weekly timetable/ Scheme of Work |
| Lunch 1—2pm | Lunch 1—2pm | Lunch 1—2pm |
| Session 4: 2—3pm Teaching Maths | Session 4: 2—3pm Teaching Maths | Session 4: 2—3pm Planning lessons |
| Wrap up 3—3.15pm | Session 5: 3—3.45pm Making materials | Wrap up 3—3.15pm |
| | Wrap up 3.45—4pm | |

To make:

Neuron labels: draw on separate half pieces of A4 paper (three)

To collect:

Pins, for pinning on neuron labels (three)

Balls, real or paper (two)

Counters: stones, bottle tops or leaves (30 for each participant)

Session 1:

Materials/Charts/Handouts

Flip chart or chalkboard, markers

Materials 1: Hausa proverbs (half a proverb for each participant)

Chart 1: Timetable Module 4

Session 2:

Materials/Charts/Handouts

Flip chart or chalkboard, markers

Chart 2: Teaching outcomes for children's learning

Chart 3: Brain cell

Chart 4: How brain cells communicate

Neuron labels and pins (three of each)

Chart 5: Parts of the brain and their functions

Session 3:

Materials/Charts/Handouts

Flip chart or chalkboard, markers

Chart 6: The brain's two hemispheres

Chart 7: Brain hemisphere development

Session 4:

Materials/Charts/Handouts

Flip chart or chalkboard, markers

Chart 8: Active methods for teaching Maths

Balls (two)

A4 paper (two pieces for each participant)

Counters (30 for each participant)

Handout 1: Abdul Kareem's story

Chart 9: Maths daily lesson plan

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Session 1

9.30—10.30am

Reconnecting/ Sharing experiences



Learning outcomes

By the end of this session,
the participants will:

.....
**have reconnected
with each other**

.....
**have reviewed the
ground rules,
and modified them
if necessary**

.....
**be able to explain
the training timetable**

.....
**have shared their
teaching experiences**



Materials

Flip chart or chalkboard,
markers

.....
Materials 1:
Hausa proverbs
(half a proverb for each
participant)

.....
Chart 1:
Timetable Module 4

Session 1

9.30—10.30am

Reconnecting/ Sharing experiences

activity 01

activity 02

activity 03

Time
10 minutes

Grouping game

Welcome the participants back and ask a volunteer to lead an opening prayer.

Make sure that the [Hausa proverb](#) halves are well mixed up. Give each participant one half of a proverb. Then tell them to move around the room and find the person with the matching half.

When they have paired up, check that they have the right partner by asking the pairs to read out their proverb. Then ask the pairs to join with another pair so that they are in groups of four.

Time
10 minutes

Reviewing the ground rules

Give each group a piece of [flip chart paper](#). Ask them to recall and write down the ground rules for the training, and highlight the three rules that their group feels are the most important.

Bring the whole class together and ask the groups to display their work. Ask, 'Do all the groups agree?' If they don't, ask them to give reasons for their priorities.

When they have finished their explanations, agree on a list of no more than six. Make sure that punctuality is one of the ground rules. Display the rules in the training room so that everyone can see them.

Time
10 minutes

The timetable for the week

Show [Chart 1: Timetable Module 4](#), and ask the participants to look at it with you. Ask, 'What is similar and what is different in this training from the previous ones?' (Similar: teaching Maths, group work, classroom management, planning lessons, making materials. Different: three training days, more and shorter sessions, brain development.)

Ask if they have any questions. Put the timetable on the wall for reference throughout the training.

activity

04

Time
30 minutes

Sharing experiences

Note to facilitators

Reflection and feedback are important ways to build a professional understanding of the role of the teacher. In the next activity, the participants will share experiences and each listener will provide some advice, guidance or a statement or question related to what they hear.

The participants will not be used to this type of activity and will need help with their feedback. It is important that you use the support teachers to help in this. Make sure that there is a support teacher with each group.

Ask the participants to think back over their last few weeks of teaching and recall one time that they helped a child to learn something new. Tell them that each member of their group will take turns describing the learning to the rest of their group.

When they have done this, the other members of the group will ask questions that will give them an understanding of how the learning was achieved. (For example, 'Did you use any teaching materials to help the learning? Did the learning take place when the child was working in a group?') Ask the support teachers to help with the questioning. Move around the room, helping where necessary.

After each person in the group has given an example, bring the whole class together and ask a volunteer from each group to say what they learned from the activity.

Summary

Remind the participants that one of the best ways to improve their teaching is to talk about it with fellow teachers and their trainers.

Stress that it is important that, when they have training sessions such as these, they use the opportunity to ask questions and discuss any successes and problems that they are having with their work.

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Day 1

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Session 2

10.30—11.30am

Brain development



Learning outcomes

By the end of this session, the participants will be able to:

.....
explain how the human brain develops and functions



Materials

Flip chart or chalkboard, markers

.....
Chart 2:
Teaching outcomes for children's learning

.....
Chart 3:
Brain cell

.....
Chart 4:
How brain cells communicate

.....
Neuron labels and pins
(three of each)

.....
Chart 5:
Parts of the brain and their functions

Session 2

10.30—11.30am

Brain development

activity 01

Time
40 minutes

Brain function

Begin by asking the participants to reflect on how they are learning to teach and how this teaching is different from the teaching in most Nigerian classrooms.

Ask them to think about why they are learning to teach in this way and what the teaching methods are trying to achieve with regards to children and their learning. Help them if necessary by asking questions such as, 'Why do you use teaching materials like number cards?' 'Why do you put children in groups to work on activities?'

Give them a few minutes to think and then ask for their responses. Write the responses on the flip chart or chalkboard.

Then show [Chart 2: Teaching outcomes for children's learning](#), and check that the participants included all the points. Summarise by going through Chart 2 so that the participants are clear about the outcomes.

Tell them that, when we as teachers reflect on how learning takes place, we can better prepare and present lessons that are most appropriate for our pupils.

Understanding the anatomy of the brain as the sensory reception and processing area can help us to design lessons that use all the senses in a calm and humane learning environment.

Show [Chart 3: Brain cell](#) and [Chart 4: How brain cells communicate](#). Explain the diagrams emphasising the following points:

Our brain is made up of neurons, which are nerve cells.

At birth, the brain has billions of neurons that are not connected. Think of how many Nigerians there are (160+ million), then multiply that by 1000. That is how many neurons a baby's brain has at birth.

The work of neurons is to communicate with each other, relating past experiences to new experiences, building knowledge and understanding.

Neurons identify patterns fed into the nervous system through the senses.

.....
Meaningful patterns lead to knowledge, knowledge should lead to action, and knowledge is more important than just information. Students of the Quran know that someone with knowledge who does not act on that knowledge is like a donkey carrying encyclopedias.
.....

.....
Neurons have arms called dendrites that begin reaching out to other neurons so that they can communicate.
.....

.....
The neurons begin to communicate with each other by building connections (synapses) between them. Neurons reach out their dendrites and make the synapses. They don't touch completely. The information jumps across the synapse from dendrite to axon.
.....

.....
As the brain develops after birth, connections are continually being made as the baby takes in the world through the senses of sight, taste, touch, hearing and smell.
.....

.....
Tell the participants that you will demonstrate how neurons communicate. Ask for three volunteers. [Pin a neuron label](#) to each volunteer, and ask them to stand in a line with their arms outstretched and their fingers almost touching.
.....

.....
When you say 'Go', tell the first person in the line to touch the finger tips of the second person and then tell the second person to pass the touch on to the third. You can also join up the whole class in this way, passing the touch along their outstretched arms.
.....

.....
Tell the class that this is how the brain works, by passing signals from one neuron to the next.
.....

.....
Emphasise that we learn through all our senses. We see. We listen. We taste. We touch. We talk. We smell. We move around and the brain takes it all in. We use our whole body to learn all our lives. And what we eat, smell, see and feel affects how we learn.
.....

.....
Also, the brain is social and grows better when interacting and learning with others.
.....

activity 02

Time
20 minutes

Parts of the brain and their functions

Show [Chart 5: Parts of the brain and their functions](#). Explain that the brain has four main parts: the cerebrum, the cerebellum, the limbic system and the brain stem. Each part is responsible for different functions, but all the parts are interconnected and need each other if the brain is to work as it should. Learning involves all parts of the brain.

Explain the diagram, emphasising the following points:

The brain stem

is the first part of the brain to develop

is responsible for regulating blood pressure, breathing and heartbeat

organises reflexes

co-ordinates movement.

The limbic system

is responsible for emotions and sensory information, for example if you are thirsty, hungry and so on.

The cerebellum

is responsible for the balance and coordination of our movements.

The cerebrum

is the largest part of the brain

is divided into different parts called lobes, with each lobe having different functions

is responsible for language, understanding, memory, motor skills and senses, for example: pain, pressure, touch, sight.

Summary

Ask if there are any clarifying questions.



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Session 3

12—1pm

Brain development



Learning outcomes

By the end of this session, the participants will be able to:

.....
identify the processing differences between the right and left sides of the brain

.....
describe how a teacher can use a knowledge of brain development to plan and teach more effective lessons



Materials

Flip chart or chalkboard, markers

.....
Chart 6:
The brain's two hemispheres

.....
Chart 7:
Brain hemisphere development

Session 3

12—1pm

Brain development

activity 01

Time
40 minutes

The brain's two hemispheres

Briefly review the last session about the parts of the brain and their functions. Then show [Chart 6: The brain's two hemispheres](#). Explain the diagram, emphasising the following points:

The brain is organised into left and right sides or hemispheres.

The left side, or left brain, is responsible for words, logic, numbers, analysis, lists and sequences. It controls the right side of the body.

The right side, or right brain, is the creative brain. It is responsible for rhythm, spatial awareness, colour, imagination, awareness and day dreaming. It controls the left side of the body.

Explain that the hemispheres develop at different times in children.

Show [Chart 7: Brain hemisphere development](#).

Read through the chart. Then ask the participants to discuss with a partner how they would use the information on Chart 7 to organise their teaching and learning.

Give some time for discussion. Then bring the whole class together and ask volunteers to give their feedback to the class.

Tell the participants that children, and most people, have a dominant brain hemisphere, and that most people process information using their dominant side. Most traditional teaching styles use left brain strategies.

Ask, 'If most teaching strategies use left brain strategies, what must you be aware of when planning your teaching?' (Possible answers are: plan for all children; use visual aids, card games, board games, movement, dance and drama, which all help to develop the right side of the brain.)

activity

02

Time
20 minutes

Use it or lose it

Tell the participants that one of the key points about brain development and learning is the 'use it or lose it' principle. Point out that they now know how neurons communicate when learning takes place.

Explain that, as learning increases, these connections strengthen. However, research shows that these connections can break down if the learning or stimulus is not maintained.

Ask the participants to write down three ways in which they can use knowledge of the 'use it or lose it' principle in their teaching. (Possible answers are: emphasising regular attendance to classes, recalling previous learning, building on children's own knowledge, regular assessment, creating a helpful learning environment, listening to pupils.)

Ask some volunteers to give their ideas to the class. Ask the class to comment on the participants' ideas.

Summary

Review what the participants have learned about the brain and learning. Remind them that the way that they are learning to teach through child-centred methods helps pupils to build knowledge through exploring materials and sensory experiences in a safe educational environment.

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Session 4

2—3pm

Teaching Maths



Learning outcomes

By the end of this session, the participants will be able to:

identify three active methods for teaching Maths

use examples of each of the three methods



Materials

Flip chart or chalkboard, markers

Chart 8:
Active methods for teaching Maths

Balls (two)

A4 paper
(two pieces for each participant)

Counters
(30 for each participant)

Handout 1:
Abdul Kareem's story

Chart 9:
Maths daily lesson plan

Session 4

2—3pm

Teaching Maths

activity 01

Time
15 minutes

Move it!

Tell the participants that in this session they will do activities that build on what we know about the brain. These activities work with the development of the neurons and the brain, and will help their pupils learn more efficiently.

Show [Chart 8: Three active methods for teaching Maths](#). Explain that the activities are connected to three of the four areas of the brain presented earlier.

The first activity, Move it!, is connected to the brain stem, the part of the brain that receives information from the senses and muscles.

Explain that children remember skills better when they use their senses. They need to handle materials and use their bodies to explore concepts.

The most significant senses at primary level are seeing, hearing and touch.

Every Maths lesson should include time for sensory experiences, for example: stepping, clapping and jumping to the rhythms of numbers or the basic facts.

Through such activities, children exercise the parts of their brain that transfer knowledge from movement to cognition. The mind and body work together, and the facts are stored in the long-term spatial memory.

Tell the participants that they will play a 'basic operations' ball game.

Divide the class into two groups, and ask each group to form a circle with one person in the middle. Give this person a [ball](#). Ask them to think of a simple addition sum (for example, $2 + 2 = 4$) but not to say it out loud.

Tell the participants that, when you tell them, the person in the middle will say the sum out loud but not give the answer. At the same time, they will throw the ball to someone in the circle, and this person will give the answer.

The person who catches the ball throws it back to the person in the middle, who then says another sum and throws the ball to another person. The aim is to keep the ball going back and forth in a steady rhythm, using different sums every time.

activity

02

When the participants understand the game, ask them to introduce subtraction, multiplication and division sums.

Summary

Bring the whole class together and ask, 'How does this activity help children to learn?' Take their ideas. Then ask them to give examples of Hausa songs or counting games that they can do with their pupils in Maths to help them learn basic operations and increase concentration.

Time
30 minutes

**Picture it!
Explore it!**

Tell the participants that the next two activities engage the cerebrum and the limbic system.

Linking Maths to the pupils' lives and previous learning through stories adds an emotional, personal and welcoming content to learning.

When pupils are told facts through a story, they can visualise, absorb and remember the information more easily than when they are told the information in an abstract way.

Give each participant two pieces of [A4 paper](#) and [30 counters](#). Ask them to draw a large circle on each piece of A4 and to place the two pieces of paper side by side in front of them.

Explain that you will tell them a story about Abdul Kareem and how he carries things in the two baskets on his bicycle. The two circles represent Abdul Kareem's baskets. The counters represent what he carries. They will work out how Abdul Kareem balances his bicycle using the 'baskets' and counters.

Begin the story:

'Abdul Kareem has a bicycle, and he uses this when he has to carry things around his village. To balance the things on his bicycle, he has two baskets. He hangs one basket off one side of the handlebars and the other basket off the other side.'

.....
'On Saturday he had to carry two young goats.'
(Ask how they would keep the bicycle balanced. Demonstrate by sharing two counters evenly: one counter in each circle.)
.....

'On Sunday he had to carry eight measures of Semovita.' (8 counters, shared evenly)
.....

'He delivered two measures to his mother.'
(Subtract two counters and share the remaining counters evenly.)
.....

'On Monday he had to carry 22 watermelons. He delivered two to his mother.'
(Check their answers to see if they have adjusted the balance.)
.....

'He gave four to his sister's family.'
(Check the answer.)
.....

'He gave three as sadaqa.'
(Check the answer.)
.....

.....
'The baskets are uneven now, but what is the best that he can manage?'
(Check the answer.)
.....

'On Tuesday he had to carry 16 young hens. One escaped and he didn't notice so what did his baskets have in them when he got home?'
(Check the answer.)
.....

'On Wednesday he had to carry 30 brocades. He had to take ten of them to each tailor. How many tailors did he visit?'
(Check the answer.)
.....

'On Thursday his five sons needed to go to the massallaci with him.'
(Ask the participants to visualise this, and point out that a better solution is to walk rather than to put his sons in the baskets.)
.....

Summary

Ask, 'Why might pupils remember more from this story than if the teacher writes the problems on the chalkboard and does them for the pupils?'
(They can form pictures, which helps them to see the problem, and they can explore the problem by moving the counters. Pupils are experiencing learning, not just trying to solve abstract problems.)
.....

Give each participant Handout 1: Abdul Kareem's story. Point out that there are more than 20 sums in the story. These are not random sums: they are linked through the story and solved with the materials. There is a flow to the sums, and the pupils feel relaxed and engaged when solving the problems.

Wrap- up 3— 3.15pm

activity 03

Time
15 minutes

Daily Maths lesson

Show [Chart 9: Maths daily lesson plan](#) and give the participants time to read through it.

.....
Tell them that, when planning their lessons, they should always follow this plan. Explain that the plan is built on the 'Move it, picture it, explore it!' principle.

.....
The reason is that their pupils are not developmentally able to learn just by listening to teachers explain the concepts.

.....
Children need to move their bodies, they need stories, they need to write and compute, and they need to explore the materials in order to learn.

Summary

Ask, 'What are the three methods that we use when teaching Maths to help children learn best?' (Move it, Picture it, Explore it.)

Briefly summarise the main points of the day's activities. Then ask the participants to do the 'two stars and one wish' activity as a whole class, sharing their comments with you orally.



Training module 4

Day 1

Charts/handouts

The charts, handouts and other materials needed for each day are illustrated here.

You will need to prepare these materials before each of the day's training begins.

Hausa proverbs

- Abin ya zo daidai! ←-----→ Mai ido daya ya leka buta.
- Abin mamaki agwagwa ←-----→ da kin ruwa
- Abin sai ido! ←-----→ Bebiya ta auri makadi.
- Abin da ya kewaye gida, ←-----→ gidan zai shiga
- Abin da aka gasa, ←-----→ ai shi ya ga wuta.
- Abin da babba ya gani, ←---→ yaro ko samaya hauba zai gani ba.
- Abin ba'a ne? ←-----→ An ce da kare mai sunan maza.
- Abin da ruwan zafi ya dafa idan ←---→ an yi hakuri na sanyi ma zai dafa.
- Abin daya ka'da kusu wuta, ←-----→ ya hi wuta zahi
- Abin aljihu, ←-----→ na mai riga ne.
- Abin da wancan ya ce shi na ce! ←-----→ Kirarin maitso.

chart 01

Timetable module 04



Day 1

Session 1:
9.30—10.30am
Reconnecting/
Sharing experiences

Session 2:
10.30—11.30am
Brain development

Tea break
11.30—12pm

Session 3:
12—1pm
Brain development

Lunch
1—2pm

Session 4:
2—3pm
Teaching Maths

Wrap up
3—3.15pm



Day 2

Session 1:
9.30—10.30am
Group work

Session 2:
10.30—11.30am
Group work/
Teaching Maths

Tea break
11.30—12pm

Session 3:
12—1pm
Teaching Maths

Lunch
1—2pm

Session 4:
2—3pm
Teaching Maths

Session 5:
3—3.45pm
Making materials

Wrap up
3.45—4pm



Day 3

Session 1:
9.30—10.30am
Classroom
management

Session 2:
10.30—11.30am
Teaching practice

Tea break
11.30—12pm

Session 3:
12—1pm
Weekly timetable/
Scheme of Work

Lunch
1—2pm

Session 4:
2—3pm
Planning lessons

Wrap up
3—3.15pm

Teaching outcomes for children's learning

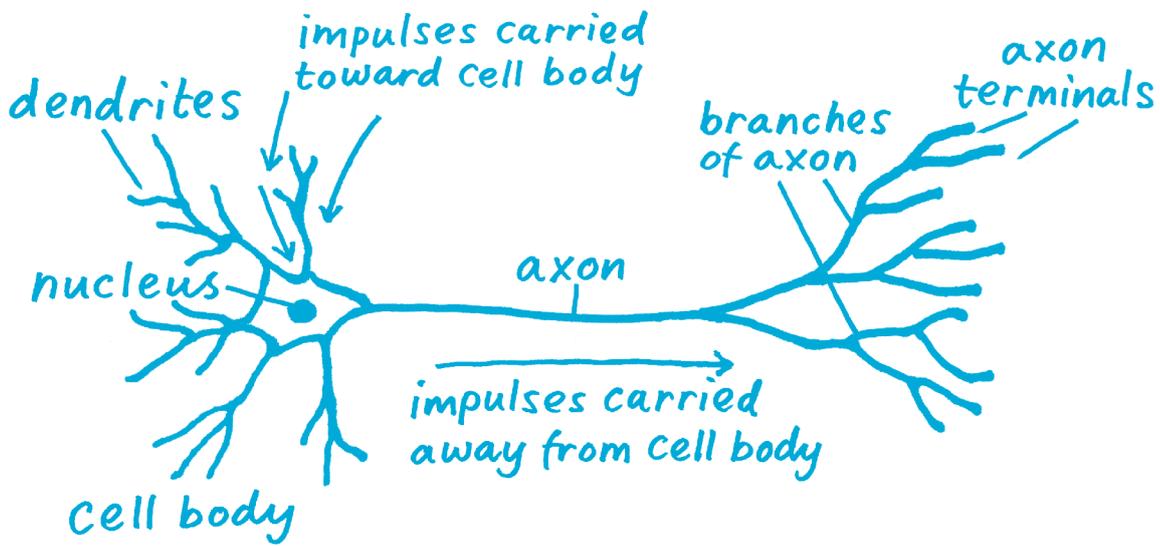
Teaching should encourage children to:

- enjoy learning
- learn useful things
- talk openly and express themselves freely
- learn cooperatively
- read for information and for pleasure
- learn how to solve problems
- discover information for themselves
- research topics on their own
- be creative
- think for themselves

chart

03

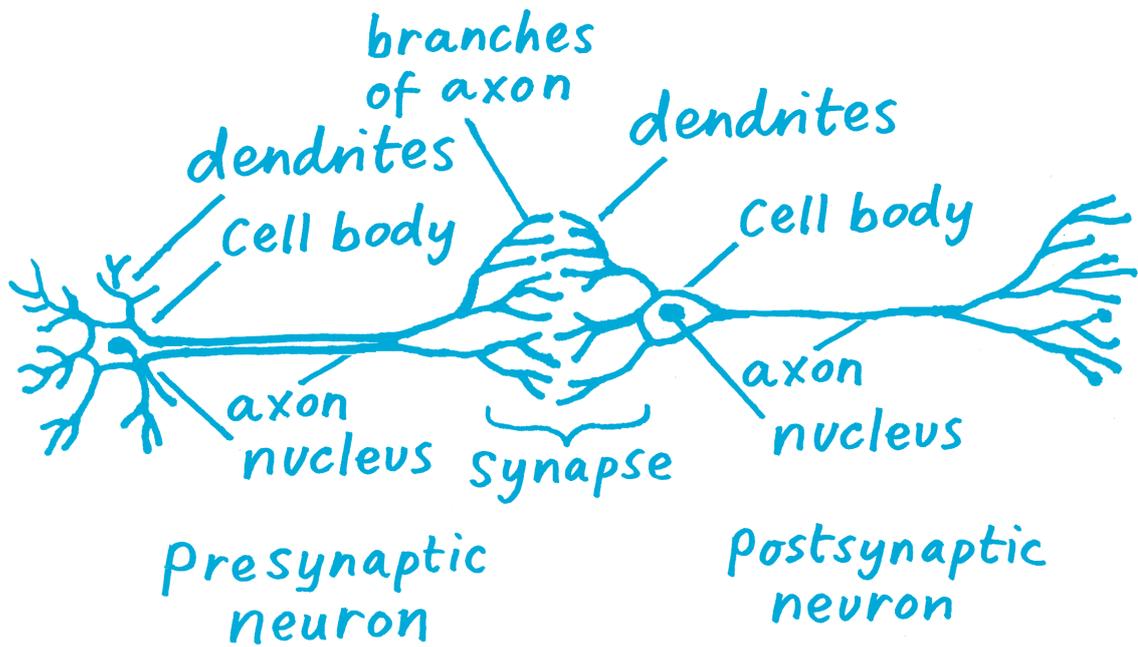
Brain cell



chart

04

How brain cells communicate



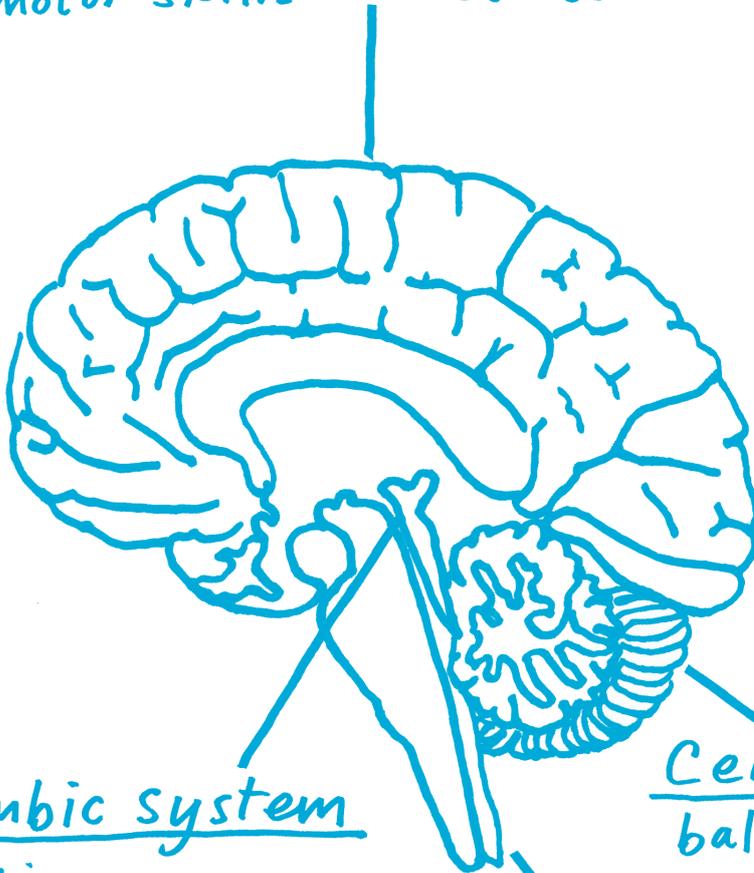
chart

05

Parts of the brain and their functions

Cerebrum

language, understanding, memory,
motor skills and senses



Limbic system

emotions,
sensory information

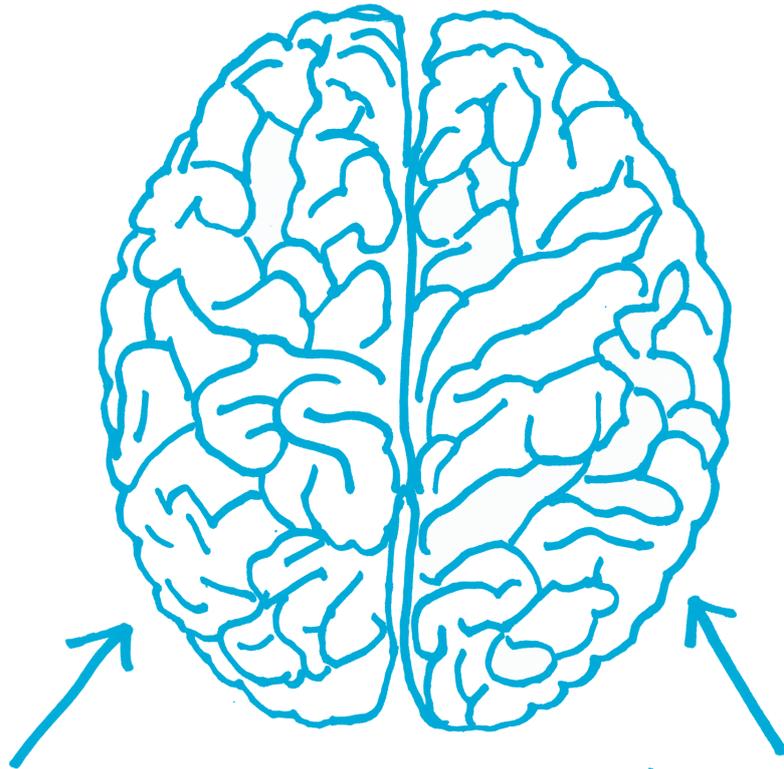
Cerebellum

balance and
coordination
of movements

Brain stem

blood pressure,
breathing, heartbeat,
reflexes, movement

The brain's two hemispheres



Left hemisphere

- responsible for words, logic, numbers, analysis, lists, sequences
- Controls the right side of the body

Right hemisphere

- responsible for creativity, rhythm, spatial awareness, colour, imagination, awareness, day dreaming.
- Controls the left side of the body

Brain hemisphere development

| <u>Growth spurt childhood 2-8</u> <u>Right hemisphere dominant</u> | <u>Growth spurt puberty / adolescence 10-15</u> <u>Left hemisphere dominant</u> |
|---|--|
| Sees the whole | Sees the parts |
| Free association | Organised thinking, including cause and effect |
| Thinking connected to imagination Symbols | Sequential thinking connected to ideas |
| Learns by doing and rhythmical activities | Learns just as well by being told how (direct instruction) |
| Operational thinking - needs objects to understand | Logical and formal operational thinking - can now understand without objects there |
| Resourceful | Analytical, abstract |
| Artistic | Pattern analysis |
| Pattern recognition | Form |
| Flow | |
| Engagement | |

Active methods for teaching Maths

Move it!

Picture it!

Explore it!

handout

01

Abdul Kareem's story

| Day | Abdul Kareem's problem | Equation |
|-----------|---|--|
| Saturday | 2 goats | $2 \div 2 = 1$ |
| Sunday | 8 measures of Semovita 2 for his mother | $8 \div 2 = 4$ $8 - 2 = 6$ $6 \div 2 = 3$ |
| Monday | 22 watermelons 2 for his mother 4 for his sister's family 3 as sadaqa | $22 \div 2 = 11$ $22 - 2 = 20$ $20 \div 2 = 10$ $20 - 4 = 16$ $16 \div 2 = 8$ $16 - 3 = 13$ $6 + 7 = 13$ |
| Tuesday | 16 hens 1 disappeared | $16 \div 2 = 8$ $16 - 1 = 15$ $7 + 8 = 15$ |
| Wednesday | 30 brocades 10 to one tailor 10 to a second tailor 10 to the last tailor | $30 \div 2 = 15$ $30 - 10 = 20$ $20 \div 2 = 10$ $20 - 10 = 10$ $10 \div 2 = 5$ $30 \div 3 = 10$ |
| Thursday | 5 sons | 0 |

Maths daily lesson plan

Mental work (5-10 minutes)

Use movement (stepping, clapping, ball tossing and so on) to the rhythms of numbers or to learn the basic facts. Or pupils listen and answer your story problems orally or in writing. Use learning materials or compute problems in workbooks. Do oral exercises with 100s chart and so on.

Introduction (10-15 minutes)

Teach the new topic/subtopic from the Scheme of Work and adapted from the textbook.

Activity (10-15 minutes)

Pupils practise the topic/subtopic in groups or pairs with an activity (or activities) using learning materials or written work for pupils to do.

Closing and assessment (5-10 minutes)

check for understanding.

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Photography

Jide Adeniyi-jones

Illustration

Sam Piyasena