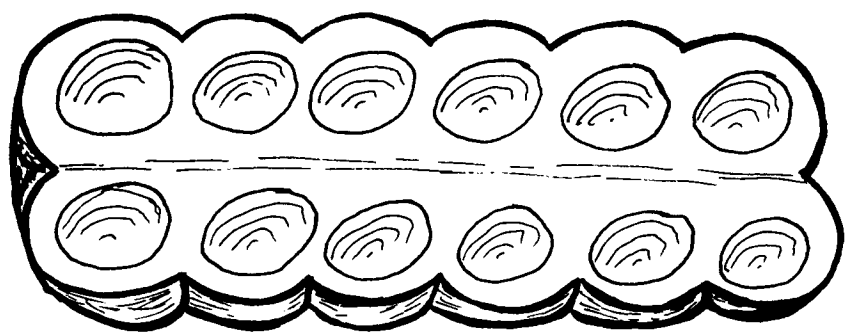
Mancala

MANCALA is the Arabic name for this particular family of games which have a number of variations. The game can be traced back to the 2nd Century B.C. and is played throughout Africa and elsewhere. The boards may vary from one to four rows and from five to ten holes per row. The following example has been submitted from Nigeria where it is known as AYO in the Yoraba-speaking part of the country. OKWE is the name given in the Ibo-speaking part of the country. (In Senegal the game is known as WARI.)



Description of Game

Suitable for an age range of 6 years and above. Ayo is normally played on a rectangular board in which has been carved 12 'holes' or 'cups", with 6 holes in each row as shown in the sketch above. The game is normally played by two persons and the six holes nearest a player constitute his/her home. Ayo is basically a count-and-capture game and at the start of a game each 'hole' should have four seeds or stones in it. A player commences by scooping up the entire content of one hole in his home and dropping the seeds (or stones) in the following holes, dropping one seed in each hole, and moving in an anti-clockwise direction.

A player only makes a capture if his move ends in a hole in the other player's home and the finishing hole is found to contain two or three seeds. He further captures, as a bonus, the content of the hole immediately preceeding the finishing hole if this is found to contain two or three seeds also. The next preceeding hole can become a further bonus if it also contains only two or three seeds. This 'bonus move' can continue providing the consecutive holes contain two or three seeds and there is no break in the chain, or until at least one hole in the opponent's side is left with stones in it. All captured seeds are removed from the board and kept by the player who made the capture.

The game ends when there are only two, three, or four seeds remaining on the board, and these tend to circulate endlessly without the possibility of any capture. At this point each player adds to his captured seeds those seeds which remain in his home. The player who has captured the largest number of seeds wins the game.

The following constraints apply throughout a game:

i. The players move alternately; a toss of the coin could be used to decide who makes the first move.
ii. A player is denied capture if the capture, including the mandatory bonus captures, would completely empty his opponent's home. The move is allowed but the capture is not.
iii. A move-hole must remain empty at the end of a move. Thus if the move-hole contained several seeds such that the move resulted in a second cycle of 'seed sowing', then the move-hole must be passed over.

It can be seen that many variations can be made on the basic game as described above. Such variations exist both in Nigeria and many other countries.

Educational Concept/Skill that Ayo enhances

i. *Counting:* Ayo encourages a player to count quickly and accurately.

ii. *Clock - Arithmetic:* Because there are twelve holes, and moves are anti-clockwise (or clockwise as the case may be), a child who plays ayo is assisted to read the clock.

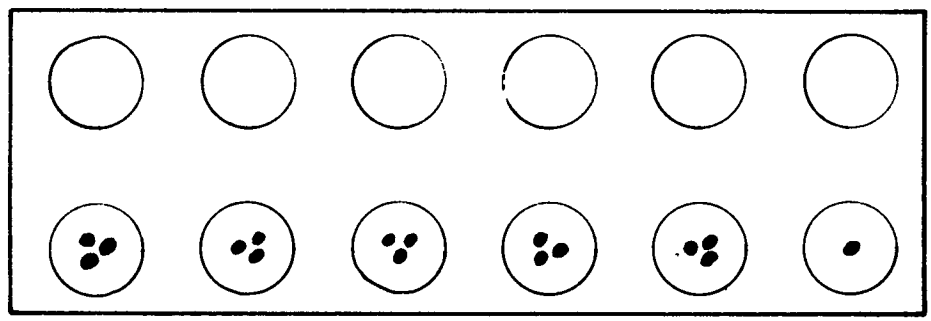
iii. *Basic Arithmetic Operations: (+, -, x, -):* A child will soon recognise that there are forty eight seeds on the board at the start of the ayo game. The arrangement of the seeds immediately suggests that

$$4 \times 12 = 48$$

The child examines his 'home' which is exactly half of the entire board and discovers that

$$4 \times 6 = 24 \text{ and } 48 - 2 = 24$$

The child can then be guided to see that the usual multiplication table(probably hanging on the wall of the classroom) can be reproduced with ease on the ayo board. Furthermore, the arrangement in the diagram below illustrates that 3 divides 16 five times with a remainder of one. Similar arithmetic, even with bigger numbers, can be carried out.



Addition and subtraction can be easily understood by the child who plays ayo; for instance the child can be guided to see the total quantity, the subtracted quantity, and the balance, in terms of the total number of ayo seeds put on the board, the number of seeds put in his opponent's home, and the number of seeds put in his own home, respectively.

iv. *Problem - solving:* This is perhaps the most important skill, call it art or science, which the child gradually acquires as he learns the elements of ayo strategy. He/she learns to compare alternatives before deciding upon a course of action. He/she learns to 'maximise profit' when he is in a good attacking position and, conversely, 'minimise loss' when he finds that several holes in his home are vunerable and underimminent attack. Moreover he/she learns to plan in the face of uncertainty, as he/she anticipates their opponent's alternatives and maps out their own strategy which will ensure that they win the game.

Points for the teacher to consider

Ayo (or Mancala) could be regarded as the 'national' game of Africa because it is so widespread. One main reason why it is so popular is that the apparatus to play the game is easy to set up. Several African children simply dig holes in the ground and use pebbles for counters. Elsewhere children may use twelve plastic coffee cups and marbles (or beans)! The teacher should therefore encourage the children to improvise if they cannot obtain the standard ayo board and ayo seeds (the hard grey-green spherical seeds of Caesalpina Crista).

The game is normally played by two persons who sit with the board placed lengthwise between them. However, it could be exciting to play 'doubles' or any other convenient group size; in the process the group will be able to discuss tactics and strategy , tactics for short-term advantage and strategy for long-term advantage.

It could also be instructive to time the moves as this could indicate how fast the child is counting and/or how much problem-solving skill they have acquired.

Finally, the teacher should be able to easily monitor the seeds to solve simple problems involving addition, subtraction, multiplication and division.