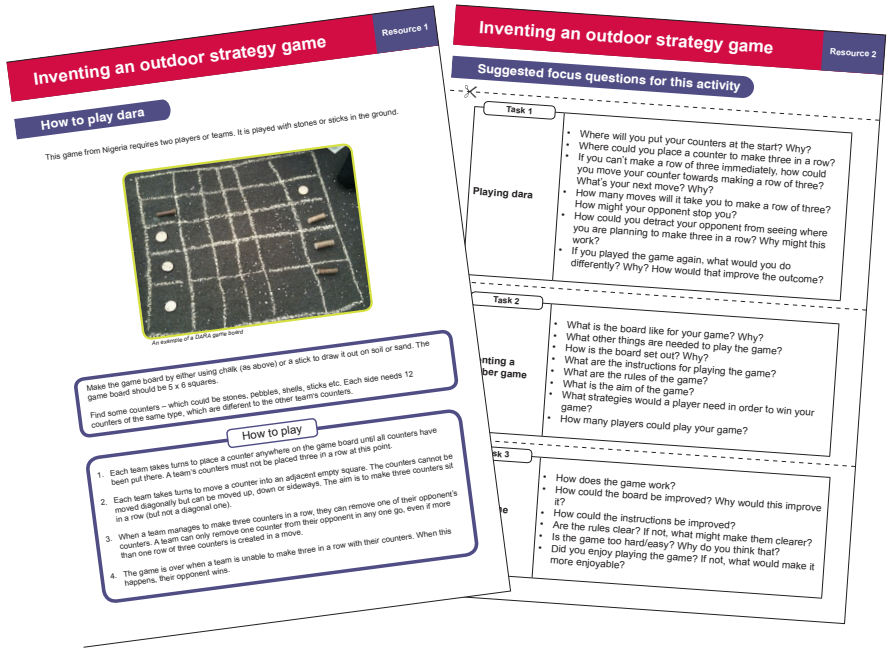
reach

Inventing an outdoor strategy game



Inventing an outdoor strategy game — Resource 1

How to play dara

This game from Nigeria requires two players or teams. It is played with stones or sticks in the ground.

An example of a DARA game board

Make the game board by either using chalk (as above) or a stick to draw it out on soil or sand. The game board should be 5 x 6 squares.

Find some counters – which could be stones, pebbles, shells, sticks etc. Each side needs 12 counters of the same type, which are different to the other team's counters.

How to play

1. Each team takes turns to place a counter anywhere on the game board until all counters have been put there. A team's counters must not be placed three in a row at this point.
2. Each team takes turns to move a counter into an adjacent empty square. The counters cannot be moved diagonally but can be moved up, down or sideways. The aim is to make three counters sit in a row (but not a diagonal one).
3. When a team manages to make three counters in a row, they can remove one of their opponent's counters. A team can only remove one counter from their opponent in any one go, even if more than one row of three counters is created in a move.
4. The game is over when a team is unable to make three in a row with their counters. When this happens, their opponent wins.

Inventing an outdoor strategy game — Resource 2

Suggested focus questions for this activity

Task 1 — Playing dara

- Where will you put your counters at the start? Why?
- Where could you place a counter to make three in a row?
- If you can't make a row of three immediately, how could you move your counter towards making a row of three? What's your next move? Why?
- How many moves will it take you to make a row of three? How might your opponent stop you?
- How could you detract your opponent from seeing where you are planning to make three in a row? Why might this work?
- If you played the game again, what would you do differently? Why? How would that improve the outcome?

Task 2 — nting a ber game

- What is the board like for your game? Why?
- What other things are needed to play the game?
- How is the board set out? Why?
- What are the instructions for playing the game?
- What are the rules of the game?
- What is the aim of the game?
- What strategies would a player need in order to win your game?
- How many players could play your game?

sk 3

- How does the game work?
- How could the board be improved? Why would this improve it?
- How could the instructions be improved?
- Are the rules clear? If not, what might make them clearer?
- Is the game too hard/easy? Why do you think that?
- Did you enjoy playing the game? If not, what would make it more enjoyable?

Bridgend Outdoor Schools
Ysgolion Awyr agored
Pen-y-Bont ar Ogwr

KS3
Maths

Cyngor Bwrdeistref Sirol Pen-y-bont ar Ogwr
BRIDGEND County Borough Council

Cronfa Amaethyddol Ewrop ar gyfer Datblygu Gwledig: Ewrop yn Buddsoddi mewn Ardaloedd Gwledig
The European Agricultural Fund for Rural Development: Europe Investing in Rural Areas

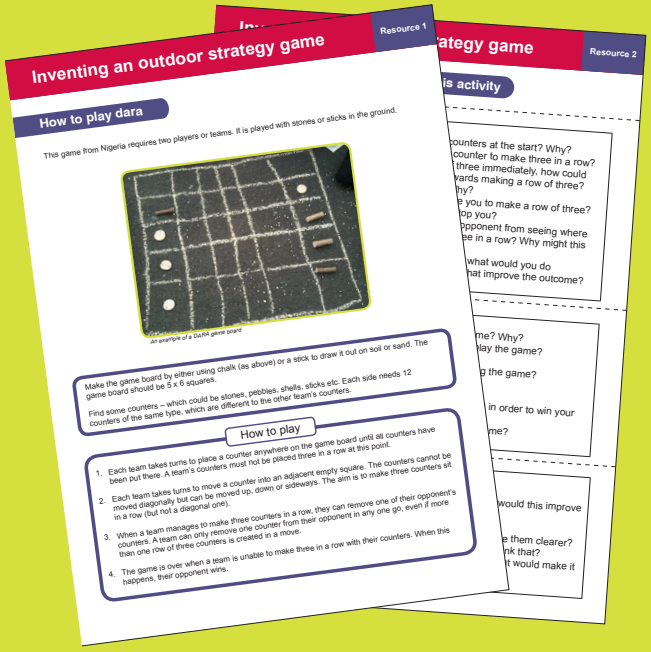
Llywodraeth Cymru
Welsh Government

LEADER

Inventing an outdoor strategy game

Learners use the outdoors as a classroom in order to play a mathematical game, dara. Dara is a two-player/team abstract strategy board game played in several countries of West Africa. In Nigeria it is played by the Dakarkari people. It is popular in Niger among the Zarma, who call it dili. In the Hausa language (Niger and Nigeria), the game is called doki which means horse. It is a clever alignment game related to noughts and crosses but far more complex. The game was invented in the 19th century or earlier.

Through playing the game, there are opportunities for learners to develop their literacy and numeracy skills, specifically those involved with oracy and numerical reasoning.



Opportunities to develop

LNF

Literacy

Oracy across the curriculum: Developing and presenting information and ideas.

Numeracy

Developing numerical reasoning: Identify processes and connections, Represent and communicate, Review.

Curriculum

KS3 Maths

Skills - SMP 1, 3, 4; CM 1, 7; RM 2, 6

Resources

Resources included with this activity

1. How to play dara
2. Suggested questions in sets, relating to each section of the source square, which can be given to each pair as they start each section. Conversely, these questions can be used by the teacher.

Resources that need to be made available

1. Sticks, stones, pebbles, shells etc. naturally found outside. Chalk if playing on tarmac.

Inventing an outdoor strategy game

Risk assessment

Prior to carrying out outdoor activities, please read Assessing risk in outdoor spaces (hyperlinked). You will need to follow your own school's health and safety guidelines and subsequently make your own risk assessments that directly relate to the outdoor space that you are going to use.

How to run the activity

Preparation

You might like to start learners with games of noughts and crosses, Connect 4 or Othello etc. to get them to practice and verbalise strategies that may be useful when playing dara. In order to improve their reasoning skills, ask them to explain to a partner why they place a counter in a particular position after each turn. It is probably better that they don't explain it to their opponent as they may give their strategies away!

Explain to the learners that they are going to play an African number strategy game outside, similar but more complex than noughts and crosses. Once they have mastered dara, they are going to invent their own mathematical game that can be played outdoors.

Doing the activity

Task 1: Playing dara

Ask the learners to read the instructions and to set up their board game. You might like to organise the groups in mixed ability to start off with and once all learners understand the game, rearrange into ability groups before setting up a team or single player tournament. Whilst they are playing the game, the teams could be posed questions to discuss (as team tactics) such as:

- Where will you put your counters at the start? Why?
- Where could you place a counter to make three in a row?
- If you can't make a row of three immediately, how could you move your counter towards making a row of three? What's your next move? Why?
- How many moves will it take you to make a row of three? How might your opponent stop you?
- How could you detract your opponent from seeing where you are planning to make three in a row? Why might this work?
- If you played the game again, what would you do differently? Why? How would that improve the outcome?

Inventing an outdoor strategy game

Task 2: Inventing a number game

Explain to the learners that they are going to invent their own mathematical game to be played outside using just the materials available in their outdoor space (plus chalk if needed). Before inventing their own game, learners could research other such games on the internet so that they have a wider knowledge-base and don't all base their game on dara.

Allow time for learners to mind map their ideas and in their groups to decide upon the basic board and the rules for their game. Whilst they are doing this, you could pose questions such as:

- What is the board like for your game? Why?
- What other things are needed to play the game?
- How is the board set out? Why?
- What are the instructions for playing the game?
- What are the rules of the game?
- What is the aim of the game?
- What strategies would a player need in order to win your game?
- How many players could play your game?

Task 3: Trialling the game

Once the games have been drafted, ask groups to exchange games and to test them out, making suggestions for improvement. Whilst trialling, questions could be posed such as:

- How does the game work?
- How could the board be improved? Why would this improve it?
- How could the instructions be improved?
- Are the rules clear? If not, what might make them clearer?
- Is the game too hard/easy? Why do you think that?
- Did you enjoy playing the game? If not, what would make it more enjoyable?

Task 4: Making the finished game

Once learners have discussed the findings of their trials, allow time for them to finalise their games. These could then be used with other classes/year groups as assessment tools to assess their numerical reasoning.

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Assessment against the LNF

Many aspects and elements could be demonstrated by learners as they carry out this activity. The main focus areas of the activity within the LNF are shown as shaded boxes in the tables below.

Literacy

Strand	Element	Aspect
Oracy across the curriculum	Developing and presenting information and ideas	Speaking
		Listening
		Collaboration and discussion
Reading across the curriculum	Locating, selecting and using information	Reading strategies
	Responding to what has been read	Comprehension
		Response and analysis
Writing across the curriculum	Organising ideas and information	Meaning, purposes, readers
		Structure and organisation
	Writing accurately	Language
		Grammar; Punctuation; Spelling; Handwriting

Numeracy

Strand	Element
Developing numerical reasoning	Identify processes and connections
	Represent and communicate
	Review
Using number skills	Use number facts and relationships
	Fractions, decimals, percentages and ratio
	Calculate using mental and written methods
	Estimate and check
	Manage money
Using measuring skills	Length, weight/mass, capacity
	Time
	Temperature
	Area and volume; Angle and position
Using data skills	Collect and record data; Present and analyse data; Interpret results