

3.3.3 Marco-Mikado

Brief description, and rules of the game

Everyone knows the Mikado game, those little sticks that you drop and have to try to catch, without the other sticks moving. We will play this game with branches from the forest. Let the children take branches of different lengths and thicknesses from the forest and put them in a pile. Now each child gets to take a branch from the pile, without the other branches moving. If the branch does move, the child is out and has to wait for his/her turn. Who has collected the most branches at the end?

A Mikado to play in nature. You combine play, creativity, cooperation and important skills such as problem-solving and resilience.

Skill focus

Primary Skill Focus

- Problem-solving

Complementary/Secondary Skill Focus

- Resilience
- Creativity
- Emotional awareness (emotional regulation and communication)

Age group	Student number	Duration
6-10 years old	2+ children	10-30 minutes

How to play - brief game rules

1. Gathering sticks (collaborative & problem-solving):
 - Let the children find their own sticks in a park, forest or garden.
 - Provide guidelines for length (e.g. about 30-40 cm) and thickness (e.g. about finger width).
 - The longer the sticks, the harder to find and the more challenging the game becomes.
 - The straighter the sticks are the easier the game becomes, the curvier the more challenging.
 - You can ask for X number of straight and x number of crooked ones to collect
 - They have to find at least 20-30 suitable sticks.
 - As a teacher choose a challenging number to collect.
 - The smaller what needs to be collected the more you can ask.
 - Have them reflect on what constitutes a "good" stick: straight, smooth, solid?
 - Problem-solving: What do we do if there are too few sticks? Or if they are all crooked
2. Marking sticks (creativity & problem-solving):
 - Have the children mark the sticks with rubber bands, colourful wool or string, washi tape, chalk or natural pigments. Colour or number of rings determine the value.
 - Determine together a point system as in traditional Mikado (e.g. one stick with lots of tape = 50 points, others 10, 20, 30).

- So, they make their ‘own’ Mikado set.

3. Game flow:

Game rules (age appropriate)

1. Throw all sticks loosely in a heap on the ground.
2. Teacher or students can also lay the sticks on top of each other.
3. One by one, players try to remove a stick from the heap without other sticks moving.
4. Does another stick move? Then the turn is over.
5. Player with most points wins.

Indoor/Outdoor Classroom layout notes

Indoor: The game is preferably played outdoors as it requires that outdoor space in nature in addition to collecting natural materials. Of course, the game can be played as big or small as you like. However, the bigger the collected branches become the more focused work can be done on the central skills here. Ensure the room is quiet enough to allow for thoughtful discussion and explanations during gameplay.

Outdoor: If played outside choose a quiet corner of the forest, park or playground where students can stay focused and avoid interference (other people, wind.) A natural setting can encourage focus on the game and deeper reflection-based choices.

How does this game develop the primary skill?

Macro Mikado is a playful and creative way to stimulate problem-solving thinking. In this game, the students search for and make sticks and branches themselves, devise their own value system and draw up the rules of the game together. This active involvement challenges them to think, make choices and work together.

While gathering materials, children learn to assess which branches are suitable, how to play safely and how to identify differences. When devising a value system, they have to argue why a particular stick is worth more or fewer points, which encourages logical reasoning and evaluation. Drawing up rules requires analytical thinking: what happens if a stick moves, how do we determine who wins, and what do we do when in doubt?

During the game itself, children are also challenged to think strategically: which stick yields the most points without moving others? In addition, they learn to deal with conflicts and work together, for example when they disagree about a rule or scoring.

Key areas for problem-solving thinking development:

- Creative and practical thinking when collecting and creating game materials
- Logical reasoning when devising a value system
- Analytical thinking when drawing up and adapting game rules
- Strategic thinking during the game itself
- Collaboration and conflict resolution in a group setting

By asking open questions and encouraging children to reflect on their choices and experiences, you strengthen their problem-solving skills in a playful and meaningful way.

What do we want to achieve regarding primary skill development (student understanding and/or behaviour)?

Throughout the different phases of the game, this skill is emphasized. E.g. when preparing Macro-Mikado, they must collect sticks. How, which, why, where are central questions to solve here. Also, within indicating points and devising a system which stick (and why) gets which rating requires this skill emphatically.

Suggested use, and practical examples

The game can be played inside the classroom but preferably outdoors. The more the children develop the materials for this game themselves, the more involved the students' play attitude will be.

- Practical example:

Children collect 19 sticks and branches with a length of at least 160 cm each.

They randomly paint the sticks and branches with red, yellow and blue bands and make some sticks completely in one colour.

- The game in arrangements:

Pick up the sticks dropped randomly on the ground, without moving the other sticks. The sticks each have a different value. The player with the most points, wins.

- Example of numbers and valuation of the sticks:

1	stick	Totally red	Points:	20
3	sticks	With yellow band		10
3	sticks	With yellow and red band		5
6	sticks	Red, yellow and blue band		3
6	sticks	Red and blue band		2

- The game rules when starting:

A pair of random players form an upright bundle with all the sticks and hold them with both hands. Then they suddenly release the sticks so that they randomly fall to the ground.

If any sticks have ended up completely loose from the fallen pile, up to 3 sticks may be placed on the pile to make the game a little more difficult.

- The game:

Players take turns trying to pick up a stick from the pile, without moving any of the other sticks. If they succeed, he or she may try to pick up another stick. If a stick in the pile moves while picking up a stick, the turn goes to the next player.

The best way to pick up a stick is to gently press on one end of the stick; the other end then rises slightly.

- The end of the game:

When all sticks have been played away, the points are counted according to the scoring table. The player with the most points is WINNER.

Materials and tools needed for implementation

- branches of various sizes and shapes (straight, crooked)
- for value marking
- various colours of paint and brushes or various colours of adhesive tape or string
- outdoor places like forest, park or playground

Guiding questions

- Reflecting on their choices
- Creative thinking
- Working together
- Applying maths
- And evaluate

Below are guiding questions divided into four phases: preparation, game design, the game itself and reflection.

1. Preparation: Finding branches

- What do you pay attention to when choosing a good stick?
- What makes a branch sturdy or fragile?
- Which branch do you think is special? Why?
- Can you find a stick that is as long as your arm? Or as thick as your thumb?
- Which is useful for play: thick or thin branches? Long or short?

Have them gather consciously and attentively. Possibly in pairs or groups.

2. Game design: make up value system

- How will you determine how many points each stick is worth?
- Can you think of a system using colours, lengths or shapes?
- Which stick do you think should be worth the most? Why?
- How do you guys make sure it stays fair for everyone?
- What do you do if two sticks are almost the same?
- Could you also give minus points? When then?

Encourage children to create their own rules and system. Have them draw or write it down if necessary.

3. During play

- How can you properly agree on who's turn it is?
- What do you do if you accidentally move another stick?
- What was a difficult choice during your turn?
- Can you predict which stick yields the most?
- How can you play carefully but smartly?
- What makes this version of Mikado different from the classic one?

You can occasionally share observations: 'I see you guys are helping each other well.' / 'Your system works really well!'

Tips and Tricks for dealing with challenges

- Before the game: Have children think of strategies to find good sticks, how to decorate them, how to distribute points.
- During the game: Which stick is the smartest to grab first? How can you lift something without moving others?
- After the game: Reflect. What worked/not worked? What strategies did they use? Would they do something differently next time?

Difficulty level tailoring

Creative extensions:

If you want to extend the activity, you can ask:

- ‘Can you name your Mikado set?’
- ‘Can you make up a story to go with it - for example, a “magic stick” or “dangerous stick”?’
- "What if each stick had a power? What would it do?"
- ‘How would you explain or present this game to someone else?’
- Cooperative Macro-Mikado: Play in pairs, with children discussing which stick to take.
- Add time pressure: One minute to collect as many points as possible.
- Nature-Mikado 2.0: Add elements such as leaves as “bonus” or pebbles as “punishments”.
- Other variants:
 - Normal Mikado
 - Mini Mikado: with toothpicks
 - Giant Mikado: with sticks of 100 cm
 - XXL Mikado: with sticks and branches of 200 cm
 - Scouting Mikado: with pioneer poles of various lengths that you must lift as a team
 - Chinese Mikado: with Chinese sticks
 - Floating Mikado: woven in metal wire.

Beginners (6-7 years old): At the beginner level, problem-solving focuses on basic decisions and simple logical steps. Children decide together which stick to take, while the teacher guides them to recognize which moves might cause other sticks to shift. More time is allowed for thinking through each decision and following the rules, helping students gradually become familiar with the foundations of strategic thinking.

Advanced learners (8-9 years old): At the advanced level, problem-solving requires faster thinking, independent decisions, and planning ahead. Children apply their own point systems, evaluate which stick can yield the most points without moving others, and adjust their strategies during the game. Disagreements are resolved cooperatively, and students refine their strategic decisions as they observe outcomes and adapt their choices.

Experts (9–10 years old): At the expert level, problem-solving emerges as complex strategic planning. Children think multiple steps ahead, combine different rule variations, and adapt quickly to changing conditions. They justify their decisions, manage conflicts independently, and continuously assess risks and opportunities to maximize success.

Debriefing and reflection questions

- Which was the hardest for you to match with a situation?
- Did someone else's explanation or example help you to it differently?
- How did it feel when your branches were challenged or picked by another player?
- How would you play the game differently next time?
- What worked well about your value system?
- Which stick did you like best or most special? Why?
- Was it distributed fairly?
- What would you do differently next time?
- What did you learn about working together / making rules / making choices?
- Could you explain this game with your family or friends?

You can also have the children draw or write about their “favourite stick” or their system