3.7.2 Tic-Tac-Toe

Brief description, and rules of the game

Tic-Tac-Toe is a well-known logic game through which students develop curiosity about possibilities, ask questions, and openly explore how a situation changes as a result of different decisions. The goal of the game is not quick victory, but rather to encourage students to observe with curiosity what happens after each move, recognise connections and patterns, and accept that the same situation can unfold in different ways. During the game, the experience of wonder naturally emerges (for example: "I didn't expect it to end like this!"), as well as openness, when students are willing to try new strategies or learn from one another's solutions.

Skill focus

- **Primary Skill Focus**
  - Curiosity, sense of wonder and openness
- **Complementary/Secondary Skill Focus**
  - Problem-solving
  - Creativity
  - Flexibility

Age group	Student number	Duration
8-10 years old	Small-group work (4–10 students) or whole-class activity using parallel game boards	10-15 minutes

How to play - brief game rules

1. Preparation: The teacher prepares the Tic-Tac-Toe boards in advance. These can be drawn or printed on paper or cardboard, drawn on the board, or created as a large-scale version on the floor or in the schoolyard. Students work in pairs. The teacher emphasises that this game is not about who wins, but about observing what happens and exploring possibilities with curiosity.
2. Game Process: Students play according to the familiar rules of Tic-Tac-Toe, taking turns to place their symbols on the board, with the aim of placing three identical symbols in a row. The teacher encourages students to observe how the board changes after each move, when a situation suddenly shifts, and which decisions lead to unexpected outcomes.
3. Raising Awareness of Wonder and Openness: During the game, or after individual rounds, the teacher may pause briefly and ask reflective questions such as: "What surprised you in this round?" "What happened differently than you expected?" "What new possibility did you notice?" These moments help students not only to play, but also to explore and discover.

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Indoor/Outdoor Classroom layout notes

The game can be implemented flexibly in the classroom, in the gym using a large grid, or outdoors by drawing the board with chalk. The varied use of space further strengthens openness and curiosity, as students encounter a familiar game in new contexts.

How does this game develop the primary skill?

Tic-Tac-Toe develops curiosity, a sense of wonder and openness by encouraging students to continuously observe changes, ask questions (e.g. “Why did it end in a draw?”), and become open to alternative solutions and perspectives. The game teaches that the first idea does not always lead to success, that surprises are a natural part of learning, and that trying new ideas is a valuable experience.

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

As a result of the game, students observe game situations with greater curiosity, try new solutions more confidently, accept uncertainty and change, and become more open to the thinking of their peers.

Suggested use, and practical examples

- The game can be used as a short “exploratory” warm-up activity at the beginning of a lesson (5–7 minutes). The teacher starts with quick rounds, focusing not on winning, but on helping students notice how quickly a situation can change after a single move. Students are encouraged to share one observation about the board in each round (for example: “I had two possible options this time.”), which activates curiosity and observational attention.
- In mathematics lessons, the game can be used as a “What if...?” learning situation focusing on patterns and rules. The teacher introduces variations, such as a 4×4 board, a win condition of four symbols in a row, or alternative winning patterns (e.g. diagonal plus corner). Students experience how a small rule change can open up an entirely new “world”, strongly supporting openness and a sense of wonder.
- For developing social connection (during class teacher sessions or community-building activities), the teacher may introduce a “polite play” rule: at the end of each round, both players share one positive observation about the other (for example: “That was a clever move.”). This supports relationship-building and openness to others’ ways of thinking.

Materials and tools needed for implementation

- Tic-Tac-Toe boards (drawn or printed)
- Markers (X–O symbols, counters, natural objects such as stones or seeds)

Guiding questions

- What did you notice on the board that was not true before the previous move?
- What changed because of just one move?
- What surprised you about the other player’s move?
- What would happen if you did not choose the “usual” place this time?
- Which option are you most curious about right now?
- Is there a move you would make just to “see what happens”?

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- What do you think the other player is trying to achieve?
- If you swapped symbols, where would you place the next move? Why?
- What can you learn from the other player's solution?

Tips and Tricks for dealing with challenges

- **Challenge:** Students focus too strongly on winning and lose their exploratory attitude.
  Tip: The teacher introduces explorer points: one point is awarded for a good observation or an interesting question. Organise a "draw challenge", where the conscious goal is to reach a draw rather than to win. This often surprises students and encourages them to explore new strategies.
- **Challenge:** Repetitive, automatic moves occur ("I always place my symbol in the same spot").
  Tip: Ask students to name at least two possible options before making a move. Introduce a "forbidden square" round, where one field is temporarily blocked, forcing students to look for alternative solutions.
- **Challenge:** Frustration appears when a student's plan does not work.
  Tip: The teacher explicitly normalises this experience by saying: "This game is an experiment, not a test." Use a "replanning signal": when the signal is given, everyone pauses briefly and states a new plan in one sentence?"

Difficulty level tailoring

Beginners (6-7 years old): The game is played on a 3×3 board at a slower pace. The teacher models thinking aloud, for example: "I can see two possible places... which one might be better?" Support cards with simple observation prompts (e.g., "I notice that...", "I wonder if...") can be used. Children explore possibilities safely, notice patterns, and ask questions about outcomes. They develop curiosity by observing how small changes affect the board, wondering what happens if they try different moves, and reflecting on surprising results.

Advanced learners (8-9 years old): The game is played on a 4×4 board, with the goal to place four identical symbols in a row. Students participate in "What if...?" rounds, modifying a rule after each game and observing the effect. They also try to predict their partner's next move. Children actively explore alternative strategies, notice complex patterns, and ask questions about potential outcomes. This encourages deeper curiosity, openness to new ideas, and the habit of testing hypotheses about the board's possibilities.

Experts (9–10 years old): Played on a 4×4 or larger board with additional challenges, such as introducing multiple game boards simultaneously or playing under time constraints. Students can experiment with custom rules, create their own variations, or play in "blind prediction" mode where moves are planned without seeing the partner's placement. Children experiment with custom rules, explore unexpected results, and respond to rapid changes. They are encouraged to formulate hypotheses, observe outcomes carefully, and ask "What if...?" questions. This level strengthens curiosity, reflective thinking, and the ability to adapt strategies flexibly while staying open to surprising outcomes.

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Debriefing and reflection questions

- What was the most surprising moment in today's game?
- Was there a move that made you think, "I didn't expect that!"? Why?
- In which situation did the game change the most because of a single move?
- Which "What if...?" question interested you the most?
- Did you try something purely out of curiosity? What happened?
- What did you learn from simply wanting to see what would happen?
- What did you take over from the other player (an idea, a way of thinking, a strategy)?
- When were you open to changing your plan? What helped you do that?
- How did the game help you accept that more than one solution can be good?

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