FULL TANK!

An easy and fun game about water.

Suggested age group: 8 to 12 years
Number of players: 2 to 3
Time: 15-20 minutes

Design and Technology Education Group
Homi Bhabha Centre for Science Education, TIFR
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FULL TANK!

Introduction

"Full Tank!" is a fun game developed for children which addresses the issue of water usage and wastage in daily life. The bedrock of any human settlement in the world is fresh water. There has been an increasing trend of losing this precious natural resource. Through this game, we hope to raise awareness about water as an essential resource which needs to be conserved. The game is an attempt to (1) expose children to an array of activities that put pressure on water resources, (2) emphasise that water, though renewable can deplete and much of daily life is inherently connected to availability of water and (3) provide comparisons between actions that are water-conserving and water-wasting.

About the game

- Contents of the game: Instruction sheet, 4 Water activity card sheets (cut out the 9 cards from each sheet), 1 card sheet with 8 blank cards and 4 markers, and a Water Tank Scale board.
- The game is played using the 'Water Tank Scale' board and water activity cards.
- The markings on the tank scale board depict the water level in the tank. The water activity cards provide information on various human activities and the associated water usage and wastage.
- The activity can be supervised by a teacher. All the new water activity cards made by students should be approved by the teacher before using them in the game.

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FULL TANK!

Instructions

01 Players start by keeping their markers* at the 'Start' position. Shuffle all of the cards and place them in a deck.

02 Players in turns pick one card at a time and read aloud the water activity and the specifics of the activity. The others are asked to guess if the marker would rise or fall on the water tank scale.

03 Players then read out the rest of the card and accordingly move their marker up (rise) or down (fall).

04 If the deck runs out of cards before the game ends, reshuffle the played-cards and use again. Reshuffling can take place at a maximum number of 2 (for 2 players) or 3 times (for 3 players).

05 The game ends when a player reaches '180L' or '0L,'. But if no one reaches 180 or 0 even after the cards are consumed for the second or third time, then the player who is at the top of the water tank wins.

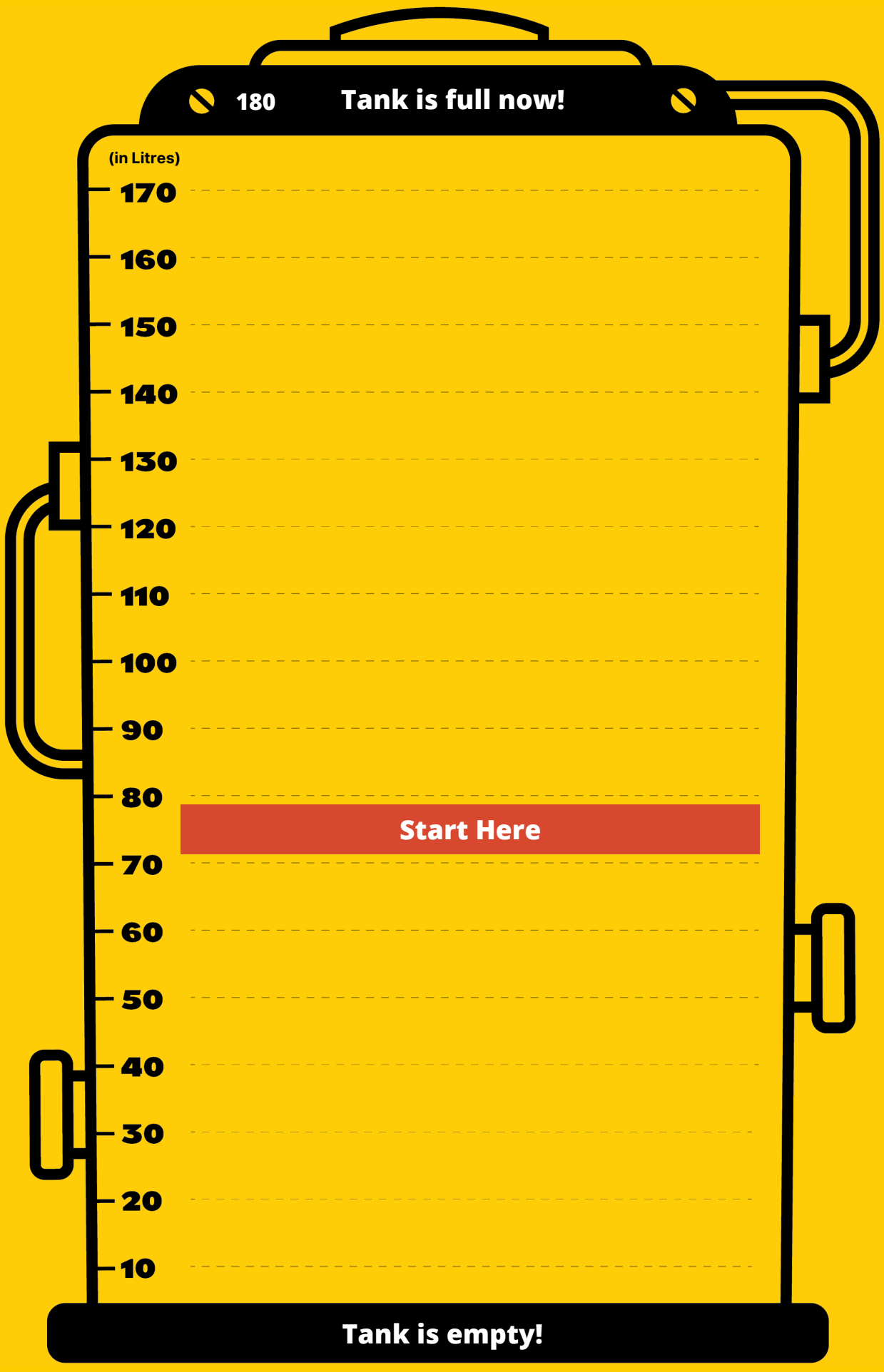
*Markers are provided at the bottom right on the DIY cards sheet. These can be cut and used by the players.

Create your own water cards!

- Students can create new water activity cards.
- In the new blank card, it is mandatory to write an activity that uses water directly or indirectly.
- The card should feature the quantity of water (in multiples of 5 in the range of 5-30 Litres) either consumed or saved. This number is only meant to be indicative of rise/fall in water.
- Students and teachers can work together to create new cards. More cards, more fun!

Water Tank Scale Board

FULL TANK!



Construction

Using Rainwater

Rise

This helps to reduce pressure on existing water resources.

Cleaning Floors

Using a Bucket of Water

Rise

Using a bucket helps to regulate amount of water used.

Cleaning Floors

Using Pipe

Fall

Continuous flowing water from pipes leads to unregulated use of water.

Washing Utensils

Using a Bucket of Water

Rise

Using bucket helps to regulate amount of water used.

Washing Utensils

Running Tap

Fall

Continuously flowing water from taps leads to unregulated use of water.

Washing Clothes

Running Tap

Fall

Continuously flowing water from taps leads to unregulated use of water.

Washing Clothes

Using a Bucket of Water

Rise

Using bucket helps to regulate amount of water used.

Cleaning Balcony

Using Pipe

Fall

Continuously flowing water from pipes leads to unregulated use of water.

Cleaning Balcony

Using Cloth

Rise

Using cloth and bucket helps to regulate amount of water used.

Water Harvesting

Harvesting + Use

Rise

This helps to reduce pressure on existing water resources.

Wet Holi

Using Water

Fall

Wastage of water is high during the festival.

Construction

In Summer

Fall

This increases pressure on existing water resources especially in drought areas.

Dry Holi

Only Natural Colours

Rise

This leads to less usage of water during the festival.

Fixing Taps

No Leaks

Rise

No leaks ensures that water is not wasted due to dripping or leakage.

Maintenance of Wells

Pollutants in Well

Fall

Pollution of well with waste makes well-water unusable.

Maintenance of Wells

Maintained Properly

Rise

Proper maintenance of well ensures that well-water remains usable for long time.

Having Bath

Using a Bucket of Water

Rise

Using a bucket helps to regulate amount of water used.

Having Bath

Using Shower

Fall

Continuously flowing water from shower leads to unregulated use of water.

Watering Plants

Using Pipe

Fall

Continuously flowing water from pipes leads to unregulated use of water.

Watering Plants

During Rainy Season

Fall

There is no need to waste water for watering plants during monsoons.

Watering Plants

In Afternoon

Fall

Higher evaporation rates in noon leads to more water wastage.

Installing Water Meter

Faulty Meter

Fall

Inability to detect **faults** in water consumption and storage leads to water wastage.

Using Water Purifier

Reverse Osmosis Purifier

Fall

For every litre of water purified, 3 litres of water is wasted in a RO purifier.

Irrigation

Drip Irrigation

Rise

Water usage can be regulated in drip irrigation.

Cleaning Vegetables

Using Discharged RO Water

Rise

You are reusing otherwise wasted water from a RO purifer.

Buying Bottled Water

When Outdoors

Fall

Manufacturing bottled water is a heavily water-intensive process.

Cleaning Vegetables

Running Tap

Fall

Continuously flowing water from taps leads to unregulated use of water.

Brushing Teeth

Using a Cup of Water

Rise

Using a cup helps to regulate amount of water used.

Carrying own Water Bottle

When Outdoors

Rise

This minimises our need to purchase bottled water.

Water Harvesting

In Rainy Season

Rise

Storage aids in having water for later use.

Washing Car

Using a Bucket of Water

Rise

Using a bucket helps to regulate amount of water used.

Brushing Teeth

Running Tap

Fall

Continuously flowing water from taps leads to unregulated use of water.

Washing Car

Using Pipes

Fall

Continuously flowing water from pipes leads to unregulated use of water.

Maintenance of Taps and Pipes

Leakage in Taps/ Pipes

Fall

A lot of water is wasted due to leaking and dripping taps and pipes.

Gardening

Using Sprinklers

Rise

Using sprinklers can reduce the amount of water used for watering the lawns and plants.

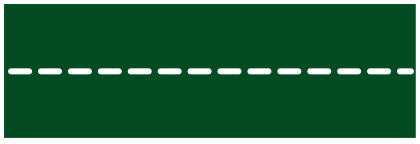
Gardening

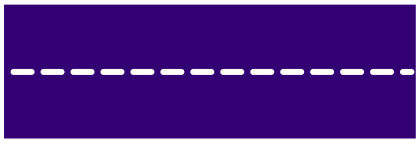
Drought Resistant Plants

Rise

Planting drought-resistant plants require much less watering.

Markers for 4 players





Background and Rationale

Motivation

The Environmental Sciences textbooks of the Maharashtra State Board cover a range of topics related to natural resources and the dependency of human beings on these. Air, water, natural gas and oil, flora and fauna, all find mention in the curriculum. While the chapters cover these themes at a broad level, there is scope to introduce the same issues using more locally relevant examples. The game "Full Tank" is an attempt to introduce the issues related to water conservation in the surroundings through play. Water forms a very important topic in the Environmental Sciences textbooks from grades 4 to 9. Sub-topics in these books deal with use of water in various scenarios of natural, public and industrial sectors along with its associated impacts. The game tries to bring to the fore small actions by us that either lead to water wastage or water conservation. In the game, students need to become aware of their surroundings and identify ways in which water is being wasted or conserved. As the game is played, it is hoped over time, students will realise that these small conservation efforts when implemented at the community level contribute significantly in safeguarding this life-sustaining natural resource.

Rationale behind the design of the game

Research has often highlighted the importance of play and games in learning (Granic, Lobel & Engels, 2014; Cooper, 2014). Moreover, when interacting with young children, play-based (Vygotsky, 1978) interventions/ activities and games tend to captivate them and direct their attention to the concerned issues (Malone, 1981; Sedig, 2008). Thus, the game “Full Tank” also attempts to discuss a relevant issue of our times (water conservation) in a simple playful manner. Tanks are common storage options in every household. The idea behind having a tank depicted as a scale, is to indicate that water though renewable is something that can become scarce and at times get exhausted. The scale tries to show that various human activities, as depicted in the ‘Water Activity Cards’ can have positive or negative effects on the water level. Of course, in reality, water conservation is not so simplistic and easy to implement. There are multiple factors that affect water usage. However, this game simplifies this issue for young children and aims to raise awareness about the connection between our actions and water wastage or conservation.

The game uses 'cards' as a physical medium to transact the play. It is a simple design which has the potential to deliver information in pieces. The most important feature of the game is that there is an option to make your own 'Water Activity Cards', so that players can bring in their own experiences and add them to the game, thereby enhancing the scope of the game. Some of the possible skills children may develop by undertaking this card-making exercise include, observation of surroundings, problem identification, looking at issues from multiple perspectives, communication and collaboration.

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India Water Portal Website: https://www.indiawaterportal.org

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