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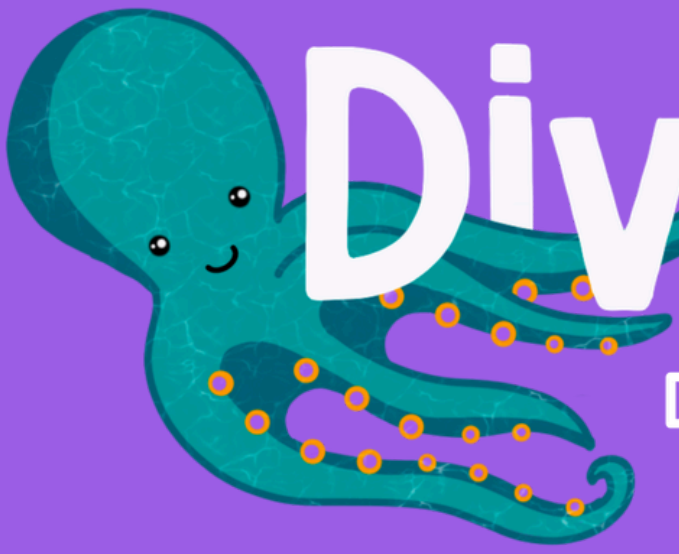

DivE(d)

Diversifying Education

# LEGO®-based learning methods

Project output #1

#DivEdKA2 #Erasmus+

**2026**
This manual was created as a Project Result of the Erasmus+ Strategic Partnership project “DivE(d): Diversifying Education” (2024-2-EE01-KA220-YOU-000290125).

The project is implemented by Vivere Kool (Estonia) together with Shokkin Group (Estonia), Nausika Educational Foundation (Poland), Fondazione Artos (Italy) and Cesis Berzaine Primary School (Latvia) with the support of the Estonian National Agency.

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Olalla González

# About the project

The ultimate goal of **DivE(d)** is to develop a **set of inclusive learning methods** (LEGO®, puzzles, LARPs, TTRPGs) suitable for **diverse-ability groups** of young people in the **youth work and education fields**.

Our objective is to support inclusivity and learning enhancement of diverse groups of young people, including those with special needs. We aim to equip educators with **tools and methods that are accessible, engaging, and adaptable to young people with varying abilities**.

### PROJECT RESULTS

- **5 capacity building webinars** about inclusive education and play.
- **5 webinar visual summaries**.
- **20+ exercises** using puzzle, LEGO®, LARP and TTRPG-based formats.
- **4 video trailers** introducing each approach.
- **2 know-how training activities** for 24 educators from the involved countries.

# About the partner organizations

**NGO Vivere school** is an inclusive private school in Tallinn. The concept of the school is to create an inclusive learning environment and to develop a support system including the development of new innovative methodologies and training for teachers and professionals working with children with accessibility needs.

**Cesis Berzaine** is a school for children with special educational needs with the main value of human dignity: teachers who understand children's daily and future needs, believe in each child's ability to achieve, inspire and support children on their own way.

**Shokkin Group** is a non-governmental and non-profit youth organization founded in 2011 with the main aim of empowering young people from different backgrounds living in Estonia by providing them with opportunities for personal, professional and social growth.

Fondazione Artos was established in 2006 as partner of Caronno Pertusella's municipality in order to manage all social and educational services of the municipality, working with formal and non-formal education.

Nausika was established to design, promote, and implement educational games for personal development and social transformation. We design and lead activities about climate change, sustainable development, ecology, soft skills and mental health.

# About the authors

**Pavel Vassiljev**

Pavel holds a master's degree in transformative game design from Uppsala University and has been designing educational games for youth camps, youth centers, international groups, and school settings since 2011.

**Irina Landa**

Irina has a decade of experience working with learners aged 6 to 17 across multiple subjects. She is a certified LEGO® SERIOUS PLAY® facilitator and applies structured LEGO®-based approaches in both formal and non-formal education.

"Over nearly a decade in schools, I had the opportunity to teach and substitute a wide range of subjects, from language classes to physics. **One pattern became very clear to me: in the early years of education, when students are 7–8 years old, learning is full of games.** However, as students grow older, this element gradually disappears, and more traditional, rigid teaching methods take over.

Yet, the need for games does not disappear. Students still rely on them as a natural way of understanding the world. **Games allow them to experiment, stay motivated, and engage without the fear of making mistakes.** Without them, learning often becomes passive, focused on correct answers rather than exploration.

Building activities, especially with LEGO®, create **a bridge between thinking and expression.** They allow learners to externalize ideas, test concepts, and communicate complex thoughts in a tangible way, making them especially valuable in diverse-ability groups."

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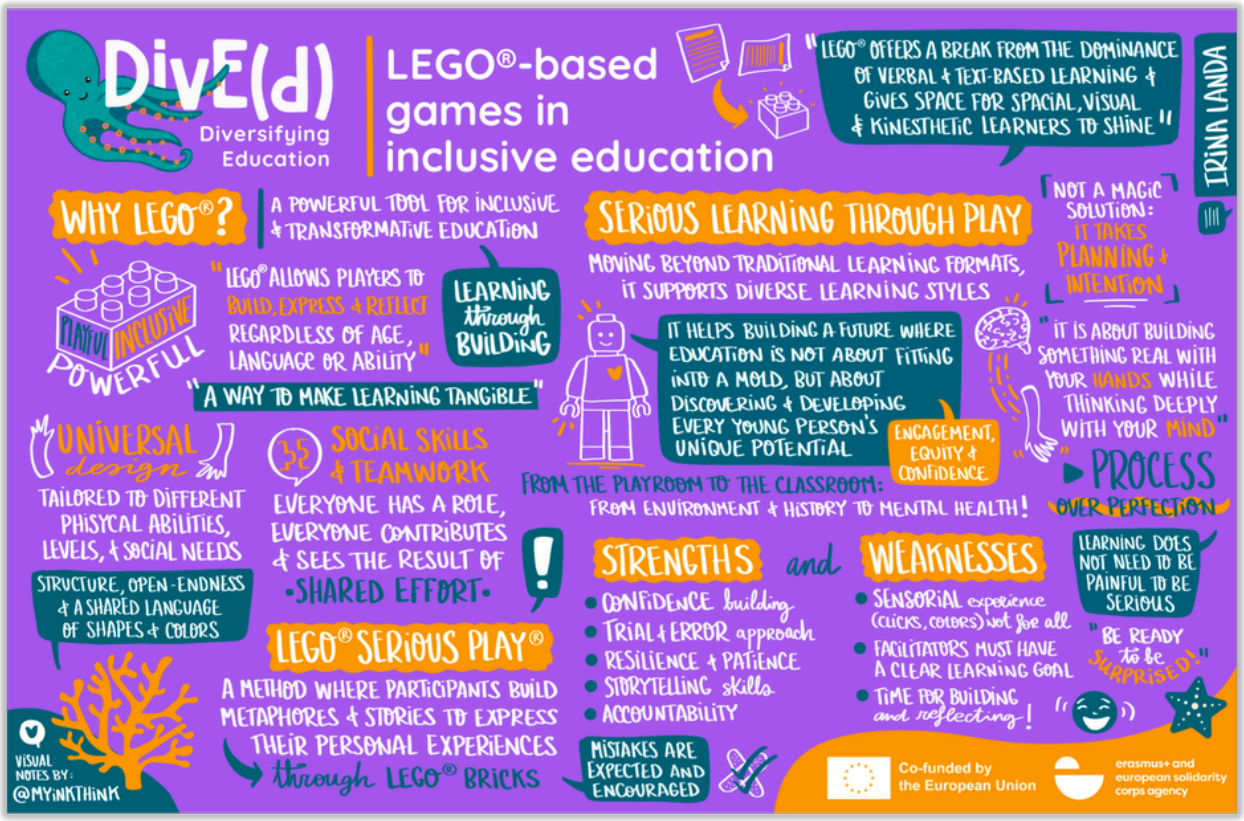
# About LEGO®-based learning

**LEGO®-based learning** is a way of learning through building. Instead of asking students to repeat information or find one correct answer, it encourages them to explore ideas by creating models. When learners build, their thinking becomes visible and they can show it, explain it, question it, and change it.

Unlike traditional classroom tasks that often have a clear right or wrong answer, **LEGO® activities are open-ended.** Even a simple challenge can lead to a variety of ideas and approaches**.** This helps shift the focus from "getting it right" to actually understanding and exploring the topic.




This approach is rooted in the ideas of Seymour Papert, who believed that people learn best when they create something meaningful. In this sense, building is not just a way to show thinking, it **is** thinking. Working with physical objects helps learners engage more actively and makes abstract ideas easier to understand.

Today, LEGO®-based methods are used not only in classrooms, but also in youth work and professional training. They help people explore systems, share perspectives, and reflect on their experiences. Approaches like LEGO® SERIOUS PLAY® show how structured building combined with discussion can lead to deeper understanding and more meaningful conversations.

At its core, LEGO®-based learning helps address a common challenge in education: students are often taught what to know, but not how to express or develop their own ideas. By making thinking tangible, LEGO® creates a bridge between abstract concepts and real understanding.

## APPROPRIATE TARGET GROUPS

LEGO®-based learning can be used across the entire learning journey - from early childhood to adult education. Its strength lies in flexibility: the same bricks can support very different levels of thinking depending on how the activity is designed.

- **Early childhood** At this stage, LEGO® supports fine motor skills, imagination, and basic storytelling. Simple building tasks help children explore shapes, patterns, and cause-effect relationships.
- **Ages 8–12** Learners begin to use building more intentionally. LEGO® can support problem-solving, collaboration, and explaining simple ideas through models.
- **Ages 13–17** LEGO® becomes a tool for working with more abstract concepts. Students can model systems, explore scenarios, and practice teamwork and communication. Building helps make complex ideas more concrete and easier to discuss.
- **Youth work & non-formal education** LEGO® is highly effective for group dynamics, reflection, and exploring social topics. It creates a safe space where participants can express ideas without relying only on words.
- **Adult learning & professional contexts** With adults, LEGO® is often used in more structured formats such as LEGO® SERIOUS PLAY®. It supports reflection, strategy development, problem-solving, and communication in teams. Building allows participants to express complex ideas, align perspectives, and engage in deeper discussions.
- **Inclusive Education** Across all age groups, LEGO® works especially well in diverse-ability settings. The hands-on and visual nature of building reduces language barriers and allows participants to contribute in different ways and at their own pace.

## APPROPRIATE SUBJECTS AND TOPICS

LEGO®-based learning can be applied across a wide range of subjects. Because it focuses on building and explaining ideas, it works especially well in areas where learners need not only to know something, but also to understand, demonstrate, and discuss it. LEGO® naturally fits STEM (science, technology, engineering, mathematics) subjects. Learners can build structures, test stability, model systems, and explore cause-and-effect relationships. It is especially useful for making abstract concepts more concrete.

- **Languages:** Building can support storytelling, speaking, and vocabulary development. Instead of only answering questions, learners create models and explain them, which encourages more meaningful communication.
- **Social studies and humanities:** LEGO® can be used to explore historical events, social systems, and relationships. For example, learners can build a model of a community, represent different perspectives, or recreate sequences of events.
- **Geography:** Students can build landscapes, maps, or models of natural and human environments, helping them understand spatial relationships and environmental systems. Topics like sustainability, climate change, and ecosystems can be explored through system models and scenario-based challenges.
- **Arts (visual arts and design):** LEGO® can be used to explore composition, form, and creativity. Learners can recreate artworks, design their own pieces, or experiment with visual expression.
- **Business and entrepreneurship:** Participants can use LEGO® to visualize ideas, design products, or model strategies. It helps make abstract concepts like value, structure, or decision-making easier to understand and discuss.
- **ICT/digital literacy:** LEGO® can be combined with digital tools (e.g., storytelling, presentations, or simple programming with LEGO® kits) to support computational thinking and digital skills.
- **Personal development and social skills:** LEGO® is highly effective for exploring topics such as teamwork, leadership, identity, and communication. Building creates a safe distance, allowing participants to express thoughts and experiences through models.

# LEGO®-based DivE(d) games

| Game name | Subject | Topic | Facilitation difficulty | Player number | Age | Game difficulty | Link to materials |
|---|---|---|---|---|---|---|---|
| **LegoNomy** | Social studies | Economic systems | 🔒🔒🔓 | 12-30 | 13-16 | 🔒🔒🔓 | 🔗 |
| **The Brick Lane** | Social studies | Supply and demand | 🔒🔒🔓 | 12-30 | 13-14 | 🔒🔒🔓 | 🔗 |
| **Net Worth** | Social studies | Gross and net income | 🔒🔓🔓 | 6-30 | 13-14 | 🔒🔓🔓 | 🔗 |
| **Solid Foundations** | Social studies | Financial literacy | 🔒🔓🔓 | 3-30 | 13-15 | 🔒🔓🔓 | 🔗 |
| **Mission AA-SAS-SSS** | Maths | Similar triangles | 🔒🔓🔓 | 2-4 | 11-13 | 🔒🔓🔓 | 🔗 |
| **Bricks. Pressure. Boom!** | Geography | Volcanic eruptions | 🔒🔓🔓 | 3-4 | 12-14 | 🔒🔓🔓 | 🔗 |
| **On the Edge of Stability** | Maths | Percentage calculation | 🔒🔒🔓 | 3-4 | 11-12 | 🔒🔒🔓 | 🔗 |
| **Where do the boundaries lie?** | Maths | Area and perimeter | 🔒🔒🔓 | 3-4 | 11-13 | 🔒🔒🔒 | 🔗 |
| **The Aurenos' experiment** | Social studies | State, private, and civil sectors | 🔒🔒🔒 | 4-6 | 15-16 | 🔒🔒🔓 | 🔗 |

# Facilitation of LEGO®-based activities

Facilitating LEGO®-based activities is less about giving instructions and more about guiding thinking. The educator's role is to create a structure where participants can explore ideas, express them through models, and reflect on them together.

At the core of LEGO®-based learning is a simple but powerful cycle:
**QUESTION → BUILD → SHARE → REFLECT**

This loop can be repeated multiple times during one session and helps structure both thinking and interaction.

## FRAMING THE EXPERIENCE (BRIEFING)

The way you introduce the activity sets the tone for everything that follows. Start with a clear question or challenge, this is what drives the building process. It is important to explain that there is no single correct model, and that the goal is not to "build nicely," but to represent ideas. Create a safe space where participants feel comfortable sharing. The task should be clear, but open enough to allow different interpretations. Set simple ground rules:

- everyone builds.
- everyone shares.
- there is no "wrong" model.

## FACILITATION DURING THE ACTIVITY

Once the question is introduced, participants move into the build phase. Here, the facilitator steps back and observes. Avoid interfering too much or giving solutions. The goal is to let participants think through their hands.

After building, move into the sharing phase. Each participant (or group) presents their model and explains what it represents. This is a crucial moment - meaning is created through explanation, not just construction.

Support the process by asking guiding questions, for example:

- "What does this part represent?"
- "How does your model answer the question?"
- "Can you show that idea in another way?"

If participants get stuck, encourage iteration rather than giving answers.

### FACILITATING THE DEBRIEFING

The final step is reflection, where the experience is connected to learning. A simple three-step structure works well:

- **Emotional:** How did you feel during the activity?
- **Reflective:** What did you build and why?
- **Applied:** How does this connect to the topic or real life?

This **“question → build → share → reflect” cycle** can be repeated several times within one session, gradually deepening understanding.

A key principle of LEGO® facilitation is that the meaning belongs to the builder. Avoid interpreting models for participants - instead, always ask them to explain.

## Adapting a game to your audience

LEGO®-based learning is highly adaptable. The same activity can work with very different groups - the key is how you frame it, structure it, and support participants during the process.

### ADAPTING TO DIFFERENT LEARNERS

Not all learners engage with content in the same way. In any group, you will meet a wide range of abilities, learning styles, and needs. LEGO® helps bridge this gap by offering a more flexible and inclusive way to participate.

Because building is visual and hands-on, it allows learners to express ideas without relying only on speaking, reading, or writing. This is especially helpful for participants who struggle with traditional formats.

For example:

- learners with ADHD may benefit from the focus that building provides
- learners on the autism spectrum may find comfort in structure and predictability
- learners with language barriers can communicate through models before words

The key is to allow different ways of participation and avoid forcing one “correct” way of engaging.

### FLEXIBILITY AND UNIVERSAL DESIGN

LEGO® naturally supports inclusive education because it combines structure and openness.

- it provides clear tasks for those who need guidance
- it allows creativity for those who need freedom
- it creates a shared visual language that goes beyond words

This makes it suitable for mixed-ability groups, where participants can engage at different levels within the same activity.

## ADAPTING COMPLEXITY

The same task can be adjusted depending on your group:

- make it more concrete for younger learners (e.g. “build a house”)
- make it more abstract for older learners (e.g. “build a safe space”)
- add constraints for advanced groups (time limits, specific elements)
- simplify by giving examples or starting points

Often, changing the question is more important than changing the materials.

## ADAPTING TO RESOURCES

You do not need complex or expensive materials to run LEGO®-based activities. Even a small number of bricks can be enough. Mixed bricks and simple tasks are enough for most activities. Group work can compensate for limited materials.

## ADVANCED FORMATS

With more time and experience, you can introduce structured methods like LEGO® SERIOUS PLAY®, where building is combined with deeper reflection and discussion.

## BEING AWARE OF LIMITATIONS

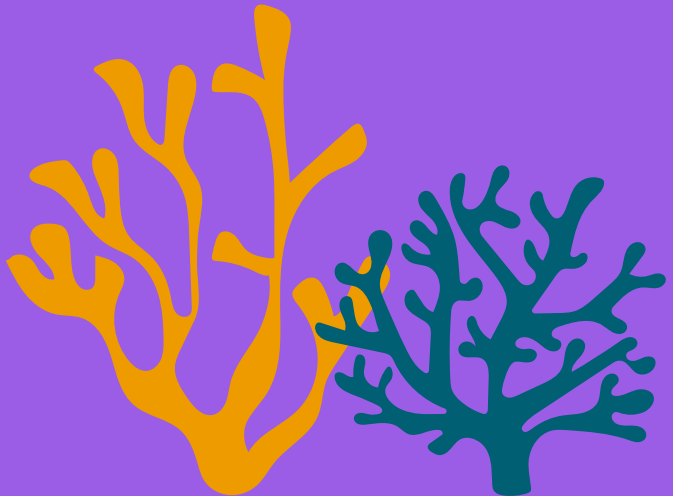
LEGO® is a powerful tool, but it is not universal.

- some learners may be sensitive to sound, touch, or visual input
- without clear goals, activities can turn into unfocused play
- time for sharing and reflection is essential - without it, learning is reduced

Being aware of these factors helps you adapt the format more effectively.

LEGO®-based
DivE(d) games

# OUTLINES



# LegoNomy

## LEGO®-based game

**Author:** Pavel Vassiljev
**Visuals by:** Olalla González

## Learning outcomes

1. Differentiate the core characteristics of traditional, command, planned, market-oriented, and mixed economic systems.
2. Analyze how different systems answer the three basic economic questions (what, how, for whom to produce).
3. Evaluate the trade-offs and consequences of each system's resource allocation methods.

## Specs

- **Group size:** 10-30
- **Age:** 13-16
- **Game session duration (including briefing/debriefing):** 45 minutes
  - 5 minutes briefing
  - 23 minutes play and presentation
  - 17 minutes debriefing and theory

## Ultimate mission

Use resources to build three specific structures (School, Factory, House) while adhering to specific rules that will be given.

## Game setup

- Prepare the game area with five tables and 5 tubs of mixed LEGO® bricks.
- Prepare the slideshow with the rules and timer.

## Game rules (what is introduced to players)

- We will experiment with different economic systems.
- Once your leader receives a mission card, they will have 3 minutes to read it without sharing any information. And once the three minutes are up, you will have exactly 15 minutes to fulfill the criteria identified in your card.
- Once the time is up, you will stop all the building processes and present your results.
- For the experiment to happen you have to strictly follow the guidelines on the cards.

## Step-by-step facilitation (what does the teacher do)

- Invite the group to enter the room and divide the group into **5 nations with an equal number of players.** In case the number of players is uneven, have 1 more person in the Market or Mixed economy nations.
- Introduce the game rules to the groups.
- Distribute the economic system cards:
  - Randomly pick a group and ask them to find out who is the **oldest person in the group.** Give that person the **green mission card (traditional economy).**
  - Randomly pick a group and ask them to find out who is wearing **the least colors in the group.** Give that person the **red mission card (command economy).**
  - Randomly pick a group and ask them to find out who is wearing **the most colors in the group.** Give that person the **purple mission card (mixed economy).**
  - Randomly pick a group and ask them to find out who is the **tallest in the group.** Give that person the **orange card (planned economy).**
  - Ask the last group to find out who is the **youngest member of the group.** Hand that player the **blue card (market economy).**
- Instruct the leaders to read the mission card, add information to the cards that demand it (Red, Blue, Purple) and start the 3 minute timer, invite leaders to ask clarifying questions.
- Once the three minutes are up, set the 15 minute timer, observe the gameplay and consult teams if needed to clarify rules.
- Once 15 minutes passed, announce the time and ask each group to present their results and share with the others how their work was organized, identifying who made the decisions and how they decided.

## Endgame

When the 15 minute building timer is over.

## Analysis

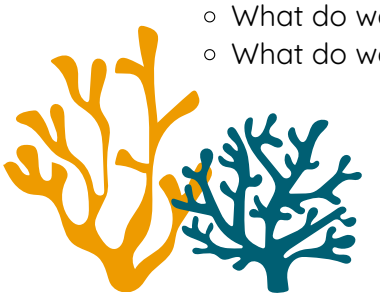
- Based on the presentations, how would you name each of the economic systems that you played as?
- If any, what was the biggest frustration with your given system?
- If any, what do you see as the biggest benefit of your given system?

**Project the slides and introduce the real names of each economic system and their key characteristics. Introduce the four key economic questions:**

- What should be produced?
- How should it be produced?
- For whom should it be produced?

**Relate the experiences back to real-world examples (Japan, Sweden, Cuba, tribes of the Amazonia). Continue the discussion based on your local reality.**

- What kind of economic system do we have in our country right now?
  - What do we see as the current challenges?
  - What do we see as the current opportunities?



## Follow-up suggestions (ideas for following lessons/meetings)

Research a developing country and debate which economic system would best allow to solve a current national challenge (e.g., infrastructure or food security).

## Game variations

Introduce a limited number of one specific rare brick color. Observe how the different systems prioritize this scarce resource.

## Material list

**Physical objects**

- 5 tubs of mixed LEGO® bricks (1 per Nation: ensure all tubs have an equal mix of colors including some scarce colors like yellow/green).

**Printouts**

- 5 Mission cards
  - Traditional System
  - Command System
  - Planned System
  - Free Market System
  - Mixed System

**Digital**

- Slideshow

Printable materials

# The Brick Lane

## LEGO®-based game

**Author:** Pavel Vassiljev
**Visuals by:** Olalla González

## Learning outcomes

1. Define demand and supply as distinct economic forces.
2. Understand how changes in price affect the quantity demanded and quantity supplied.
3. Identify the concept of equilibrium price in a simplified market setting.

## Specs

- **Group size:** 12-30
- **Age:** 13-14
- **Game session duration (including briefing/debriefing):** 45 minutes
  - 10 minutes briefing
  - 25 minutes play and presentation
  - 10 minutes debriefing and theory

## Ultimate mission

- **Producers:** Maximize their total game currency.
- **Builders:** To complete as many Target Blueprint models as possible.

## Disclaimer

Trade in the real world involves more complex factors like information asymmetry, monopolies, and product differentiation. This game provides a simplified model to demonstrate basic market dynamics.

## Game setup

- Establish the **Market** (a table being the central trading area for selling buildings for their value) near a screen with projected slides.
- Prepare bags with an equal amount of **20 variably colored 4x2 LEGO® Bricks (Supply)** to distribute to each **producer**.
- Divide wallets with 40 Brick bucks **(Budget/Demand)** to distribute to each team of **builders**:
  - 10 x 1 Brick-Buck
  - 2 x 5 Brick-Bucks
  - 2 x 10 Brick Bucks

- Prepare a **transaction log** to be given to each **producer**.
- Prepare **target blueprint A** to be given to each team of **builders**.
- Prepare **Target Blueprints B and C** to be distributed in rounds 2 and 3.
- Prepare two **15-20 LEGO® brick containers per producer.** These should be given in rounds 2 and 3.

## Intro trailer (read to players)

”Welcome to the Brick Lane! Our thriving city needs builders, and you are the engine of its economy. **Producers**, you have the **Supply**: hundreds of precious bricks. **Builders**, you have the **Demand**: a secret building plan you must complete.

The Facilitator will announce the official price of a standard brick every round, but remember: **you are free to negotiate any price you agree on!** Producers seek to maximize profit, and builders seek to complete their blueprints at the lowest cost.

Trade wisely, record your transactions, and watch how the market shifts! The clock is ticking!”

## Game rules (what is introduced to players)

- The game consists of **3 trading rounds** of **7 minutes each**.
- The **starting price changes from round to round** and is announced by the facilitator.
  - high demand/low supply increases price;
  - low demand/high supply decreases price;
- All trades must be recorded in the **transaction log** by the producers.
- At any moment during a round, builders can trade in a **built house for its value**.
- At the beginning of each round, producers will produce **more bricks**, while builders will get **new blueprints**.
- To win the builder side of the mission: build as many Target Blueprints as possible to get the points indicated on the cards.
- To win the producer’s side of the mission: earn the biggest amount of Brick-Bucks.

## Step-by-step facilitation (what does the teacher do)

- Set up the game area and materials.
- Invite the group to enter.
- Explain the Law of Demand and the Law of Supply and how they intersect at equilibrium.
- Divide the group into: **individual producers** (up to 6) and **teams of 2-3 builders** (up to 8). Make sure that the producer to builder ratio is approximately 40%/60%.
- Hand out **a bag of supply** to each producer and **a wallet with game currency** and a **target blueprint card A** for each builder.
- Read out the intro trailer, explain game rules, project slide #1 and start the 7 minute round.

- After 7 minutes pass, provide builders with a new target blueprint B, provide producers with 15 new random bricks, project slide #2, announce the 2nd round.
- After 7 minutes pass, provide builders with a new target blueprint C, provide producers with 15 random new bricks, project slide #3, announce the 3rd round.
- After 7 minutes pass, call time. Ask builders to come and check the value of their buildings and ask producers to calculate their income. Proceed to debriefing questions.

## Endgame

When the 3 trading rounds are completed.

## Analysis

**Compare producer profits and builders results. Ask:**

- Producers, when did you sell the most (high price or low price)?
- Builders, when did you manage to buy for the best price (big quantity or small quantity)?
- What were your negotiations and purchasing strategies?
- Show slide #4 and ask what influenced the change in price?
- How did these price adjustments influence your negotiations?
- With the information you have now, how would you play this game?

**Use the trading data to visually illustrate a basic supply and demand curve concept on the board.**

## Follow-up suggestions (ideas for following lessons/meetings)

Ask students to track prices of some highly changeable commodities like gas or electricity over a few weeks to a month. Discuss in the following meeting what influences these prices and what the consumer strategies can be?

## Game variations

1. Introduce a "**Price Ceiling**" (a maximum allowed price) or "**Price Floor**" (a minimum allowed price) and discuss the resulting market shortage or surplus in the next lesson.
2. In Round 3, introduce a "**New Tech**" rule for Producers (e.g., "New production technique allows you to produce 10 more bricks for free," simulating a supply shift).

## Material list

**Physical objects**

- Tubs of standard 2x4 LEGO® bricks:
  - 50 x Green
  - 50 x Red
  - 60 x Black
  - 70 x Blue
  - 70 x Yellow

**Printouts**

- Custom game currency (alternatively, use poker or other game chips)
- Transaction Log sheet (one per producer)
- Target Blueprint cards (one per team of builders)
- Facilitator's card

**Digital**

- Slideshow with brick prices

# Net Worth

## LEGO®-based game

**Author:** Pavel Vassiljev
**Visuals by:** Olalla González

## Learning outcomes

1. Define Gross (Brutto) Income and Net (Netto) Income.
2. Identify common mandatory deductions (income tax, social security) from gross income.
3. Understand why a difference exists between the gross cost to the employer and the net pay received by the employee.

## Specs

- **Group size:** 6-30
- **Age:** 13-14
- **Game session duration (including briefing/debriefing):** 35 minutes
  - 5 minutes briefing
  - 20 minutes play and presentation
  - 10 minutes debriefing and theory

## Disclaimer

The deduction percentages are simplified and may not reflect actual local tax rates. When preparing to use this game, adjust the data to current tax rates of your area. Alternatively, play the game with provided numbers and introduce the real national rates as an immediate follow-up to the game.

## Ultimate mission

Build the house of your dreams with the resources you have.

## Game setup

- **Pre-divide LEGO® bricks** for each group (15/20/30) according to the chart.
- Prepare a **pool of social tax** according to the number of groups in the game.
- Prepare **infrastructure building cards** or pre-build additional LEGO® structures to represent amenities on the cards to be built on tax money.
- Prepare **6–10 tables or floor areas** for individuals or groups up to 3 to build their houses.
- Prepare **1 bigger table or floor area** to represent the town.
- Provide each group with **15-30 LEGO® pieces** (2x4) and a **small baseplate** (8x8).
- Set up a **tax pool area** with as many empty tax containers as you want to introduce.
- Project **Slide #1**.

| | Starting Bricks | Social tax |
|---|---|---|
| Group 1 | 15 Yellow bricks | 5 |
| Group 2 | 20 Blue bricks | 7 |
| Group 3 | 20 Blue bricks | 7 |
| Group 4 | 20 Blue bricks | 7 |
| Group 5 | 30 White bricks | 10 |
| Group 6 | 30 White bricks | 10 |
| Group 7 | 30 White bricks | 10 |
| Group 8 | 15 Yellow bricks | 5 |
| Group 9 | 20 Blue bricks | 7 |
| Group 10 | 20 Blue bricks | 7 |

## Intro trailer (read to players)

"Welcome to Net Worth! A game of spending your money to build a home. You have 5 minutes to build a house with the Gross/Brutto income that you received."

## Game rules (what is introduced to players)

- You can only use the resources that were given to you.
- Use the time to finish your dream house.
- You do not have to use all the bricks.

## Step-by-step facilitation (what does the teacher do)

- Set up the game area and materials.
- Invite the group to enter the space.
- Create small **groups of 1–3 players**, and give each group a number of **LEGO® pieces and a small baseplate.** Project **slide #2**.
- Read out the **trailer** and announce the **5-minute** building round. Project **slide #3**.
- Once the time is up, call time and ask players to **give their house a name** and showcase it quickly.
- Project **slide #4**. Ask all groups to bring their houses to one area (big table or floor) and distribute them in a town style.
- Project **slides #5 and #6**. Announce that you forgot the taxation round. Project **slide #7**. Introduce each tax, its purpose, and its amount in percentage. Project **slide #8**. Announce any taxes that are already in the tax pool and their amount (e.g. social tax).

- Ask each group to separate enough pieces from their house to **cover expected taxes.** Ask players whether they feel that the tax rates are fair. Mention that whoever is not happy with the tax rates can keep any of the taxes they want and place them back into their houses.
- Announce that taxes should be declared and given to the respective containers. **Ask players to declare their taxes** (mark groups that paid the full tax amount and those that didn't).
- Project **slide #9**. Announce that we have 10 infrastructure projects that can be invested in.
- Give a random **infrastructure card** to any individual. Ask them to read it. Once the card and its price are announced, take the number of bricks from the tax pool corresponding to the card price and proceed to fulfill the card's effect (add the "infrastructure" to the town or make an announcement). If there are not enough resources in the tax pool, offer players to fund it privately. Once all interested groups pay privately, if not all paid, announce the consequence.
- Go through all infrastructure cards in a random order.
- Once all the cards are used up, project **slide #10**, conclude the current state of the town, and proceed to debriefing questions.

## Analysis

- How satisfied are you with your house and its surroundings? Why?
- Why did you have to give back part of the bricks in the form of taxes?
- How does the gross and net salary work in our country?
- What is the value of taxes that you saw in this game?
- What are the tax rates that we pay in our country? What are we getting for these taxes?
- How do you think taxes should be distributed?

## Follow-up suggestions (ideas for following lessons/meetings)

Research a current national debate about government spending (e.g., healthcare, education, defence) and identify which deduction (type of tax) likely funds it.

## Game variations

- **Tiered Tax:** Introduce a tiered system: anyone who starts with more bricks has to pay a higher percentage of income tax.
- **Variables:** Prepare life event cards, adding tax deductions or fines to the game; add any global events to test the town at the end of the game.

## Material list

**Physical objects**

- 15-30 mixed LEGO® bricks per group (the income).
- 1 x Base plate per group (8x8).
- (Optional) 67 mixed LEGO® bricks for the social tax pool (33% on top of the salaries given). Alternatively, introduce the 33% tax pool as virtual and deplete it by calculating the costs of cards. Once the social tax pool is depleted, start using the contributed bricks.
- 1 x 6-sided die. Alternatively, use a virtual one.

**Printed materials:**

- 25 x Object cards or pre-built objects for the town-building stage.
- 10 x Infrastructure cards

**Digital materials:**

- Slideshow

Printable materials

# Solid Foundations

## LEGO®-based game

**Author:** Pavel Vassiljev
**Visuals by:** Olalla González

## Learning outcomes

1. Physically categorize expenses and prioritize essential costs over discretionary spending.
2. Learn that money (represented by bricks) is a finite resource: spending on one category reduces availability for others.
3. Experience how "savings" act as a buffer against unexpected "life events," preventing financial collapse (simulated by structural instability or debt).

## Specs

- **Group size:** 9-30
- **Age:** 13-15
- **Game session duration (including briefing/debriefing):** 40 minutes
  - 5 minutes briefing
  - 25 minutes play and presentation
  - 10 minutes debriefing and theory

## Disclaimer

This game requires a collection of standard LEGO® bricks or compatible building blocks. Colors are important for mechanics. If specific colors are unavailable, the facilitator should assign different meanings to available colors before starting.

## Ultimate mission

Construct a "Life Structure" that meets all mandatory survival requirements (Needs) and includes as many luxury items (Wants) as possible, while maintaining enough structural integrity (Savings) to survive unexpected “Life Events” without taking on debt.

## Game setup

- Place a pile of **White bricks (Income)** in the centre of the room or at the teacher's desk.
- Place piles of **Blue (Needs), Yellow (Wants), Green (Insurance) and Red (Debt/Emergency) bricks** accessible to groups.
- Each group gets one **"Foundation Baseplate"** (small, e.g., 8x8 or 10x10 studs) and one **family budget template**.
- The game master projects the **slide #1**.
- The game master shuffles and keeps the **"Life Event Cards"**.

## Intro trailer (read to players)

"Welcome to adulting. In this simulation, you aren't just building a tower; you are building a life. Your family needs a solid foundation to survive, but you also want to have fun and live comfortably. Every brick you lay represents a financial decision. The challenge? You don't know what tomorrow brings. Can you build a life that stands tall when the storms of life hit, or will your budget crumble under the pressure?"

## Game rules (what is introduced to players)

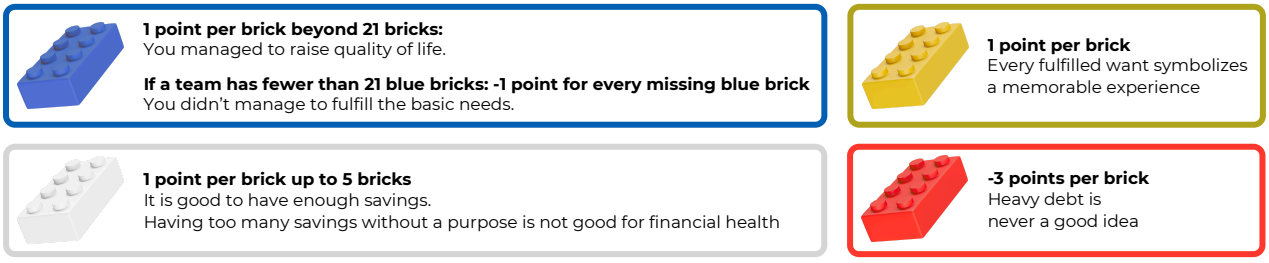
- **White bricks are your monthly income.** You receive a fixed salary of 12 White Bricks at the start of this month.
- You cannot build with White Bricks. You must exchange them at "The Market" to buy building materials:
  - **Blue Bricks (Needs):** Cost 1 White Brick each. You must have at least 6 Blue bricks in your structure to "survive".
  - **Yellow Bricks (Wants):** Cost 1 White Brick each. These add to your "Happiness Score".
  - **Green Bricks (Insurances):** Cost 1 White Brick each. These may help you overcome some events.
- Any White Bricks not exchanged are kept as **Savings**. These can be used later.
- If a **Life Event** forces you to pay, and you have no White Bricks left, you must take a **Red Brick.** Red Bricks are "Heavy Debt": they must be placed on top of your structure, but they do not count toward happiness. They are a burden.
- You must build a **single, connected structure** on your baseplate with all bricks visible.

## Step-by-step facilitation (what does the teacher do)

- Set up the game area and materials.
- Invite the group to enter.
- Create small **groups of 3-5 students**.
- Read out the intro **trailer**, the ultimate **mission** and the **rules**.
- Distribute 12 White Bricks to each group. Project the costs for the first month **(Slide #2)** and explain all of the items.
- Give groups **5 minutes** to discuss and exchange their White Bricks for Blue, Yellow or Green bricks. They can also decide to save.
- Groups build their structures on the baseplates. They can design it however they want, but it must be stable, and all bricks should be visible.
- **After 5 minutes**. Ask one player to draw one **Life Event Card** and read it aloud. The card's effect applies to everyone.
  - Example: "Car Breakdown! Repairs cost 2 White Bricks."
  - Groups must pay 2 white bricks from their savings.
  - If they cannot pay (no savings), they must take 2 Red Bricks (Debt) and add them to the top of their structure immediately.
- **Final Adjustment (2 mins):** Allow groups to use any remaining savings to buy more Yellow bricks (Wants) if they want or keep the savings.
- Project the costs of the second month (**Slide #3**). Repeat the sequence.
- Project the costs of the third month (**Slide #4**). Repeat the sequence.

## Endgame

The game ends after the third "Life Event" is resolved and final adjustments are made.
The teacher asks all groups to stop touching their structures and invites them to calculate their bricks by color based on **Slide #5** and then convert it into happiness points (**Slide #6**).



## Analysis

- Look at the groups with Red Bricks (Debt) on top. How does that debt affect the stability of your structure? How does it make you feel looking at it?
- Ask a group with high Savings: Why did you choose to keep White Bricks instead of buying more Yellow (Fun) bricks? Did you feel you missed out?
- Ask a group with many Yellow Bricks: You have a "fun" life, but were you prepared for the Life Event?
- How can this LEGO® tower represent a real bank account?

**Ask students to calculate the "real world" cost of their LEGO® structure:**
If 1 White Brick = 200 EUR, have them write out a budget sheet representing their tower (e.g., Rent 600 EUR, Groceries 400 EUR, Car Repair 200 EUR). Introduce the 50/30/20 savings rule to the students and invite them to try it out on a weekly basis.

## Follow-up suggestions (ideas for following lessons/meetings)

Ask students to calculate their monthly expenses and their monthly income. Invite them to analyze it based on the 50/30/20 rule and come up with ideas of what they can adjust.

## Game variations

- **The Unstable Economy:** Play 3 rounds (3 Months). Carry over the structure. In Month 2, Income drops to 10 White Bricks (Recession), but costs remain the same.
- **Hard Mode:** Provide baseplates that are uneven or smaller, representing different socioeconomic starting points.

## Material list

**Physical objects**

- LEGO® Bricks:
  - White (Income): ~20 per group.
  - Blue (Needs/Expenses): ~20 per group.
  - Yellow (Wants/Luxuries): ~20 per group.
  - Green (Insurance): ~6 per group.
  - Red (Debt): ~6 per group (ensure these are large/clunky bricks if possible, e.g., 6x4).
- Baseplates: 1 small plate per group (small, e.g., 8x8 or 10x10 studs).

**Printouts**

- 9 Event Cards
- 1 Family budget per team

**Digital**

- Slideshow

Printable materials

# Mission AA-SAS-SSS

## LEGO®-based game

**Author:** Irina Landa
**Visuals by:** Olalla González

## Learning outcomes

1. Identify similar triangles using AA, SAS, and SSS criteria.
2. Model proportional side lengths using construction bricks.
3. Justify triangle similarity using correct mathematical language.

## Specs

- **Group size:** 2–4 students per group
- **Age:** 11-13
- **Game session duration (including briefing/debriefing):** 45 minutes
  - 5 minutes briefing
  - 25 minutes play and presentation
  - 10 minutes debriefing and theory

## Disclaimer

LEGO® bricks are used as learning tools. Side lengths are measured using stud counts, so small inaccuracies may occur.

## Ultimate mission

To build and prove three pairs of similar triangles using AA, SAS, and SSS.

## Game setup

- Each group receives a **set of construction bricks** (plates, bricks, corner or hinged elements).
- One brick stud represents **one unit of length**.
- The classroom is divided into **three stations**: AA, SAS, and SSS.

## Intro trailer (read to players)

“Builders, the Temple of Similarity is collapsing! Only those who can construct and prove similar triangles will unlock its chambers. Count your studs, match your angles, and build wisely to complete the mission.”

## Game rules (what is introduced to players)

- Side lengths are represented by the number of brick studs.
- Angles are built using corner or hinged elements.
- At each station, teams must explain why the triangles are similar.
- One rebuild is allowed per station.

## Step-by-step facilitation (what does the teacher do)

- Explain how brick studs are used as units of length.
- Review the three triangle similarity criteria (AA, SAS, SSS).
- Divide students into groups and assign starting stations.
- Observe group work and ask guiding questions.
- Check solutions and allow groups to move to the next station.

## Endgame

The game ends when a team successfully completes all three stations and assembles the final large similar triangle.

## Analysis

- How did building with bricks help you understand similarity?
- Which similarity rule was the easiest or hardest to apply?
- What mistakes occurred when proportions were incorrect?

## Follow-up suggestions (ideas for following lessons/meetings)

Solve real-world word problems involving similar triangles or have students design their own brick-based similarity challenges.

## Game variations

- **Free build mode:** create any pair of similar triangles.
- **Error hunt:** identify why a given pair is not similar
- **Timed challenge:** complete stations against the clock.

## Material list

**Physical objects**

- LEGO® bricks, various elements: 35–45 pieces per group.
- Corner or hinged elements: 4-6 pieces per group.
- Baseplates: one per group.

**Printouts**

- Station cards: one per group.

Printable materials

# Bricks. Pressure. Boom!

## LEGO®-based game

**Author:** Irina Landa
**Visuals by:** Olalla González

## Learning outcomes

1. Explain how pressure causes a volcanic eruption.
2. Use a physical model to describe volcanic processes.
3. Explain the causes of volcanism and volcanic eruptions.

## Specs

- **Group size:** 3–4 students per group
- **Age:** 12-14
- **Game session duration (including briefing/debriefing):** 40 minutes
  - 5 minutes briefing
  - 20 minutes play and presentation
  - 10 minutes debriefing and theory

## Disclaimer

This activity uses a simplified model of a volcano. The eruption experiment is a simulation using safe household materials and does not fully represent real volcanic processes. Only 5% household vinegar is used for the eruption experiment to ensure student safety.

## Ultimate mission

To reconstruct the lost instruction, build a brick volcano model, simulate an eruption, and clearly explain the causes, effects, and potential dangers of volcanic activity.

## Game setup

Students work in small groups at tables.
Each group receives:

- construction bricks
- a base plate
- a tray or protective mat
- a small plastic cup
- one envelope with instruction fragments

The cup represents the **magma chamber**. Bricks are used to build the **volcano structure** around the container. The opening at the top represents the **crater**.
**Important! Groups may not begin building until the instruction has been fully reconstructed.**

## Intro trailer (read to players)

"You are a team of volcanologists sent to investigate a highly active volcano. The previous research team was urgently evacuated after a sudden increase in volcanic activity. Tremors shook the ground, gas emissions intensified, and there was no time to secure their work. Their equipment was left behind. Their notes were scattered. The most important document: the instruction explaining the internal structure of the volcano, survived only in fragments.

Pressure is building underground. The volcano is becoming unstable. To understand what is happening and what may happen next, you must restore the lost instruction, build a model of the volcano, and investigate what happens inside before an eruption. You have one chance to piece the knowledge together. Can you understand the volcano before it erupts?"

## Game rules (what is introduced to players)

- You must reconstruct the full instruction before building begins.
- The model must include key volcano parts (magma chamber, vent, crater).
- During the eruption, students observe only and do not touch the materials.
- All safety rules must be followed.
- The focus is on explanation and understanding, not decoration.

## Step-by-step facilitation (what does the teacher do)

- Explain briefly how pressure causes a volcanic eruption. Introduce the topic and the mission.
- Read the intro trailer aloud.
- Review the safety rules.
- Distribute materials and instruction envelopes.
- Observe the groups as they reconstruct the instruction.
- Confirm that each group has completed the instruction.
- Allow building to begin.
- After the models are built, give each group the eruption materials:
  - 1–2 tablespoons of baking soda placed into the container (magma chamber)
  - 60–100 ml of 5% household vinegar, prepared in advance
  - (Optional: a few drops of food coloring and a small amount of dish soap)
- Guide students through adding the vinegar to the container.
- Supervise the eruption experiment.
- Ask guiding questions about pressure, causes, and effects.
- Distributes a post-eruption discussion card to each group
- Supports students in explaining their models and discussion card responses using scientific language.

## Notes from practice

Adding ambient sounds can help create a stronger atmosphere during the activity. Providing students with protective glasses or/and simple “scientist” elements (e.g., lab coats, badges, any volcanologist equipment) can increase immersion and engagement.

## Endgame

The game ends when each group has demonstrated the eruption and explained how pressure inside the volcano caused the eruption and what effects it may have.

## Analysis

- What caused the eruption in your model?
- How does pressure build up inside a volcano?
- How can volcanic eruptions affect people and the environment?
- What should people do to stay safe during a volcanic eruption?

## Follow-up suggestions (ideas for following lessons/meetings)

- Compare volcanoes and earthquakes as natural hazards
- Analyze real volcanic eruptions and their consequences
- Create a simple safety guide for living near a volcano

## Game variations

- Build-only version without the eruption experiment.
- Teacher-led eruption demonstration.
- Adding labels or short written explanations to the model.
- Providing the full instruction to students instead of reconstruction (for time-limited lessons or introductory sessions).
- Giving groups different pressure conditions (different amounts of baking soda, different “sealing” of the crater). For example: group A: narrow vent, group B: wide vent, group C: an additional “layer” of bricks on top.
- Introducing the hypothesis before the eruption.

## Material list

**Physical objects**

- Construction bricks: approx. 100 LEGO® 2×4 bricks.
- Base plate: 32×32 studs (1 per group).
- Small plastic cup: approx. 200–250 ml (1 per group) or any base for volcano experiment.
- Baking soda: 1–2 tablespoons per group.
- Vinegar: 60–100 ml, 5% household vinegar per group. For students sensitive to strong smells, citric acid can be used as an alternative, as it provides the same effect without noticeable odor.
- Food coloring (optional).
- Dish soap (optional, increases foam and enhances the visual effect of the eruption).
- Tray or protective mat.
- Small envelopes: one per group

**Printouts**

- Cut instructions table: one per group
- Post-eruption task card: one per group
- Teacher version of instruction table

# On the Edge of Stability

## LEGO®-based game

**Author:** Irina Landa
**Visuals by:** Olalla González

## Learning outcomes

1. Understand a percentage as a part of a whole.
2. Calculate and apply exact percentages (exactly, at least, no more than).
3. Check and justify solutions by considering multiple conditions at the same time.

## Specs

- **Group size:** 3–4 students per group
- **Age:** 11-12
- **Game session duration (including briefing/debriefing):** 45 minutes
  - 5 minutes briefing
  - 30 minutes play and presentation
  - 10 minutes debriefing and theory

## Disclaimer

This game is a fictional learning model. All events, systems, and “foundation” are imaginary and used solely for teaching percentages and parts of a whole.

## Ultimate mission

Keep the shelter stable for 7 days by meeting all daily conditions and waiting for rescue.

## Game setup

Students work in groups of 3–4. Each group receives 50 LEGO® bricks in five different colors. Any colors available may be used. The colors listed are provided as an example:

- 18 blue (water) ,
- 14 green (food),
- 8 red (security),
- 4 purple (medicine).
- 6 black (reserve: resources that are not used right now but help the system stay stable in case something goes wrong)

All other bricks stay next to the system and may be swapped in or out.
During the day, the system must contain exactly 20 bricks. At night, everything goes back to the warehouse. In the morning, you can use all resources again to rebuild your system.

## Intro trailer (read to players)

"Two days ago, a major accident occurred at the city power plant. Electricity went out, phones and the internet stopped working, and many systems shut down. All city residents were forced to move into an underground shelter on the edge of the city, and now you are here, inside that shelter. The shelter is operating, but it is very unstable. To prevent it from shutting down, the system's stability must be distributed correctly.

You have 20 units of stability and this is 100% of what keeps the shelter running. You are the shelter's operations team. Each day, you must decide how to distribute stability so the shelter continues to function. At night, all resources are returned to the "warehouse" and become available again the next day. Help is expected to arrive in seven days, but until then, the shelter must survive. If the system becomes unstable on any day, the shelter may shut down. Your task is to maintain stability for seven days and wait for rescue.

## Game rules (what is introduced to players)

- 20 bricks = 100% stability.
- The system must always contain exactly 20 bricks during the day.
- Try to include all types of resources in your system whenever possible.
- Each color represents how stability is used (water, food, security, reserve, medicine).

## Step-by-step facilitation (what does the teacher do)

- Before the game, ensure that students recall how to calculate a percentage of a number and convert between percentages and quantities. If needed, write the formulas in a visible place (e.g., on the board):
  **x% of N = (x/100) × N**
  **percentage = (part / whole) × 100**
- Divide students into groups and distribute LEGO® sets.
- Explain the basics: **20 bricks = 100%**, meaning of colors.
- Read the day's story, then the task.
- To complete the day's task, groups have 2–4 minutes to discuss and rebuild their system.
- After each day's task, ask the groups: "Is your system stable today? Why?". Check that:
  - exactly 20 bricks are used,
  - today's condition is met,
  - all previous conditions are still met.
  - If not, allow the group to rebuild before moving on.

## Endgame

After successfully completing Day 7, the teacher announces:
**"Rescue has arrived. The shelter is saved."**

## Analysis

Discuss with the class:

- Which day was the hardest, and why?
- Which percentages required the most careful calculation?
- Why was guessing "by eye" not enough?
- How did you check that your system was correct?

## Follow-up suggestions (ideas for following lessons/meetings)

- Solve written percentage problems based on the game scenarios.
- Analyze “broken” systems and identify which condition is violated.
- Transition to formal percentage calculations using formulas.

## Game variations

- Adjust the number of days to match the ability level of your group. The game can be played with fewer or more days depending on students’ experience with percentages.
- Increase difficulty by adding an extra day with a new exact percentage condition that must be satisfied together with all previous ones.

## Material list

**Physical objects**

- Timer (optional)
- Table space or mat for building
- LEGO® bricks (2×4) - 50 per group :
- 18 blue (water), i.e. LEGO® Element ID: 6508680,
- 14 green (food), i.e. LEGO® Element ID: 4106356,
- 8 red (security), i.e. LEGO® Element ID: 300121,
- 6 black (reserve), i.e. LEGO® Element ID: 300126,
- 4 purple (medicine), i.e. LEGO®Element ID: 4520632.

**Printouts**

- Reference sheet: “20 bricks = 100% stability”: one per group
- Day cards: Day 1 – Day 7 (story + task): one set per group

# Where do the boundaries lie?

## LEGO®-based game

**Author:** Irina Landa
**Visuals by:** Olalla González

## Learning outcomes

1. Understand the difference between area and perimeter as properties of space.
2. Calculate area and perimeter of plane figures in a practical context.
3. Make and justify decisions while considering multiple constraints at the same time.

## Specs

- **Group size:** 3-4
- **Age:** 11-13
- **Game session duration (including briefing/debriefing):** 45 minutes
  - 7 minutes briefing
  - 30 minutes play and presentation
  - 8 minutes debriefing and theory

## Disclaimer

There is no single correct solution in this game. The goal is not to build the “perfect” layout, but to explain and justify decisions and calculations.

## Game setup

Each group receives:

- One (green) LEGO® **32×32 baseplate** (the farm territory).
- 150 LEGO® **1×1 bricks** (used as fences).
- 10 LEGO® **animal figures or pictures** of respective animals.
- One **game worksheet**.
- One copy of **visual game rules**.
- After choosing their animals, each group receives a set of **condition cards**.

## Ultimate mission

Place all 10 animals by building a separate enclosure for each one on a LEGO® 32×32 foundation plate, using no more than 150 LEGO® 1×1 bricks, and correctly determine the area and perimeter of each enclosure.

## Intro trailer (read to players)

“Several years ago, a decision was made to create a wildlife reserve for animals that were rescued from unsafe or unsuitable conditions. Some of these animals were injured, others had lived too close to human activity for too long, and some had lost their natural habitats. Because of this, they can no longer return to the wild or live safely in human environments.

The purpose of the reserve is to provide these animals with a permanent home: a place where they can live calmly and safely for the rest of their lives.

At the moment, the reserve exists only as an empty territory. There are no habitats yet, no fences, and no clear boundaries. In order for the animals to live side by side without stress or conflict, each animal needs its own clearly defined living space with enough room and proper boundaries.

The reserve has strict limitations. All available land fits on a single LEGO® 32×32 baseplate, and the amount of fencing material is limited. In addition, some animals have special requirements related to the size of their living space or the length of the fence. These requirements cannot be ignored, as they directly affect the animals’ safety and well-being.

Your task is to design the wildlife reserve so that each rescued animal has its own permanent habitat, there is enough space for everyone, and all constraints are met.

## Game rules (what is introduced to players)

- The entire habitat must fit on one LEGO® 32×32 baseplate.
- Each of the 10 animals must have its own separate enclosure.
- Enclosures may be built only from LEGO® 1×1 bricks.
- The height of every enclosure wall must be exactly one brick.
- LEGO® 1×1 bricks may be used only as fences, not to fill the interior area.
- Enclosures must not overlap.
- Each enclosure must contain exactly one animal.
- Each group may use no more than 150 LEGO® 1×1 bricks in total.
- Enclosures may be placed next to each other and share a common wall.
- A shared wall is counted only once. You may build multiple enclosures that share walls.
- Each enclosure may have no more than one shared wall with another enclosure.
- At the beginning of the game, each group chooses any 4 animals out of the 10. These 4 animals will have special conditions, while the remaining animals are placed without additional conditions, but must still follow all the general rules of the game.
- For each chosen animal, the group draws one condition card.
- A condition card applies only to that animal and may not be replaced or changed.

## Step-by-step facilitation (what does the teacher do)

- Divide students into groups of 3–4 and distribute the materials (one set per team).
- At the start, make sure students remember how to calculate area and perimeter. If necessary, write the formulas in a visible place.

**NB!** It is really important to mention that perimeter is calculated along the outer boundary of the shape, not by counting the bricks, as corner bricks are included in both the length and the width. First determine the length and the width (including the corner bricks), then calculate the perimeter using the formula: **P=2(a+b)**

- Read the intro story and explain the game rules. Give each group a copy of the rules.
- Ask each group to select 4 animals for the special condition cards.
- Allow time for planning and building the enclosures.
- Remind students to follow the condition cards, recalculate area and perimeter when changing shapes, and record their calculations on the worksheet.
- Ask guiding questions without giving ready-made solutions.

## Endgame

The game ends when all 10 enclosures are built (or as many as possible within the time limit), the area and perimeter of each enclosure are determined, all animals are placed inside their enclosures, and all condition cards are satisfied.

## Analysis

Discuss with students what was harder - managing area or saving fence length (perimeter), which enclosure shapes worked best and why, whether they needed to rebuild enclosures after receiving conditions, and where the boundaries lie in this game.

## Follow-up suggestions (ideas for following lessons/meetings)

Change the number of animals with condition cards, adjust the number of available LEGO® 1×1 bricks, or split the game into two stages: planning and rebuilding.

## Game variations

- Reduce the number of animals for less experienced groups, increase constraints for advanced groups, or change the total number of fence bricks.
- End the game with a final reserve inspection by randomly drawing one inspection card (inspection cards are included in the materials) and evaluating only that single criterion, with no rebuilding allowed.

## Material list

**Physical objects**

- LEGO® baseplate 32×32 (green) - 1 per group
- LEGO® 1×1 bricks - 150 per group (for example, LEGO® Element ID: 4211242)
- 10 LEGO® animal figures (exact animals and elements may vary. Pictures can be used instead of physical figures if needed.)
  - Dog - for example, LEGO® Element ID: 6510642
  - Cat - for example, LEGO® Element ID: 6405725
  - Sheep - for example, LEGO® Element ID: 6528907
  - Goat - for example, LEGO® Element ID: 6490240
  - Horse - for example, LEGO® Element ID: 6370297
  - Rabbit - for example, LEGO® Element ID: 6481605
  - Dolphin - for example, LEGO® Element ID: 6540712
  - Fox - for example, LEGO® Element ID: 6478257
  - Bird - for example, LEGO® Element ID: 6399031
  - Baby seal - for example, LEGO® Element ID: 6434764

**Printouts**

- Game worksheet: 1 per group (includes one version with empty animal names cells)
- Visual game rules: 1 per group
- Inspection cards (optional)
- Condition cards (area and perimeter): 1 set per group
- Animal cards (optional): 1 set per group, if LEGO® animal figures are not available

# The Aurenos' experiment

## LEGO®-based game

**Author:** Irina Landa
**Visuals by:** Olalla González

## Learning outcomes

1. Distinguish between state, private, and civil sectors through their core logics.
2. Give examples of how these sectors act and cooperate within society.
3. Understand how individuals can participate in state, private, and civil sectors and how this participation affects societal stability.

## Specs

- **Group size:** 3 groups of 4–6 students in each group
- **Age:** 15–16
- **Game session duration (including briefing/debriefing):** 90 minutes
  - 10 minutes briefing
  - 65 minutes play and presentation
  - 15 minutes debriefing and theory

## Disclaimer

This game uses a fictional scenario and simplified models of society. Its purpose is to explore differences and interactions between societal sectors, not to present a "correct" or ideal model.

## Game setup

- The class is divided into three groups of equal size. Each group chooses one **logic card**:
  - "Rules First"
  - "Profit First"
  - "People Together"
- Each logic can be chosen by **only one group**.
- Each group is seated at a separate table or workspace and receives a basic LEGO® SERIOUS PLAY® set.
- Groups are instructed not to look at or interfere with other groups' constructions during the first round.
- The teacher keeps the **Aurenos' Intervention cards** and introduces them only in Round 2.
- A **central table** or open space is prepared in advance for the final round, where all groups will later combine their remaining elements into one shared model.

## Intro trailer (read to players)

"The Aurenos are intelligent beings from a distant planet. They have long solved the problems of survival: they have energy, technology, and resources, and these work perfectly. Their challenge is not how to live, but how to live together.

The Aurenos tried to build their society around a single clear logic, hoping this would make everything predictable. Each attempt failed. The system became too rigid, or depended only on profit, or stopped working when participation weakened.

While observing Earth, the Aurenos noticed something unexpected. What surprised them most was not that things on Earth constantly change and malfunction, but that society continues to function thanks to different roles: those who set rules, those who create goods and services, and those who unite and act on their own initiative.

The Aurenos can not read explanations or listen to theories because they do not understand us. They understand complex ideas only through forms, structures, and connections between elements. They want to see how different societal logics work on their own, how they respond to pressure, and whether they can be combined into one system.

What you build now, the Aurenos will accept as a possible version of their future."

## Ultimate mission

To show how different societal logics function independently, how they are affected by external pressure, and how they can be combined into one functioning society.

## Game rules (what is introduced to players)

- Each group represents one way society can be organised: **rules first, profit first, or people together.** You make decisions and build from this perspective, as if it comes first in your society.
- Everything that matters must be shown through LEGO® elements and connections.
- The game unfolds in **4 rounds**. In each round, new situations may appear that require you to respond by changing your model.
- At certain points, the Aurenos will intervene to test how your system responds to pressure. When this happens, changes to your model are required. **You cannot undo changes once they are made.**
- Every decision stays part of the system you are building.

## Step-by-step facilitation (what does the teacher do)

The teacher begins by introducing the game and outlining the rules, and then facilitates the first round of play:

**Round 1: build your logic | 20 minutes**
Before the first round begins, you can briefly explain to the participants that LEGO® elements can symbolize different ideas, feelings, roles, or situations, and that each participant may use them in their own way and explain the meaning of their model.

The teacher lets the groups choose their logic cards (Rules First / Profit First / People Together) and gives the instruction:
**"Build a society in which your logic is dominant. Use the instruction card your group received. Show how decisions are made, what keeps the system together, and how an individual can act within it. Everything that matters must be built using LEGO®®".**

The facilitator monitors time and does not comment on the models or guide decisions.
At the end of the round, each group briefly presents its model (30–40 seconds).
No questions, comments, or discussion are allowed at this stage.

**Round 2: Aurenos' interventions | 15 minutes**
The teacher introduces the idea of Aurenos' interventions and explains the rules (the rules are distributed to teams together with the Aurenos' Intervention cards).

All three groups act at the same time. At the start of the round, each group selects one delegate and one Aurenos' Intervention card.

At the teacher's signal, each group sends their delegate to another group in a clockwise direction. The delegate places the chosen card on the selected model and says aloud:
**"The Aurenos test your system with this."**

The delegate remains at the receiving group's table to ensure that the rules are followed and the change is made. Each group can receive only one intervention per round.

The group whose model is tested must immediately show the impact by either:
- removing one/several LEGO® elements, or
- breaking one connection that does not withstand the intervention.

No discussion or negotiation is allowed between groups at this stage. The affected group is given one minute for internal discussion to decide which element or connection will be changed. The change must then be made immediately.

**Round 3: minimum for survival | 15 minutes**
The teacher reads aloud: **"The Aurenos ask you to keep only a minimum number of elements. Fuel is expensive, and not everything can be transported to their planet. Leave only what your logic cannot function without."**

**Final Round: one society | 20 minutes**
All groups bring their remaining elements together to create one shared societal model. Each group must connect its logic to both of the other logics, and connections must be mutually agreed upon. A connection is a physical LEGO® link (bridge, joint, shared element, pathway, platform, mechanism) that visibly connects the core elements of two logics and shows interaction or dependency between them.

At this stage, groups may explain their connections, ask questions, and discuss how the logics work together.

## Endgame

The game ends when a single shared model is built that includes all three logics and visible connections between them.

## Analysis

Debriefing questions are provided as guidance. You may choose only some of them, rephrase them, or use your own questions:

- What made each logic strong, and where were its vulnerabilities?
- Where do you see the public, private, and civic sectors in the final model?
- How can an individual act within each sector?
- What happens to the system if participation disappears within one of the logics?
- What was the most difficult part of the game for me, and why?
- At what moment did I have to change my initial opinion?
- What helped me better understand my group's logic?
- How did our group's decisions affect others?
- Where in the game did you see cooperation between different logics?
- What happens to society when people stop participating?
- At what moment did our group show initiative?
- What did we do to maintain the stability of the system?
- What risks did we consciously take?
- Why did different groups imagine a "working society" differently?
- How did differences in approaches affect the overall outcome?
- Was it difficult to accept another logic as equal to your own?
- How did we make decisions within our group?
- What helped or prevented people from being heard?
- How did communication change under time pressure and interventions?
- For which decision was it especially important for me to take responsibility?
- What did I feel when the system had to be destroyed or simplified?
- What does this experience say about my role in real society?
- Where do you see these three logics in real life?
- How can the actions of a single person change the stability of a system?
- What could you do differently in a real-life context (school, city, community)?

## Follow-up suggestions (ideas for following lessons/meetings)

Analyze a real-life context (school, city, or country) using the three sectors. Individual reflection task: describe one real example of your own participation in one of the sectors.

## Game variations

- Short version without the final integration round.
- Extended version with a second intervention round.
- Version with explicit individual roles added to each logic.
- Extended version (with an additional intervention round): after the final integration, the facilitator draws one Aurens intervention card, reads it aloud, and asks the groups to immediately remove one key connection from the shared model.

## Material list

**Physical objects**

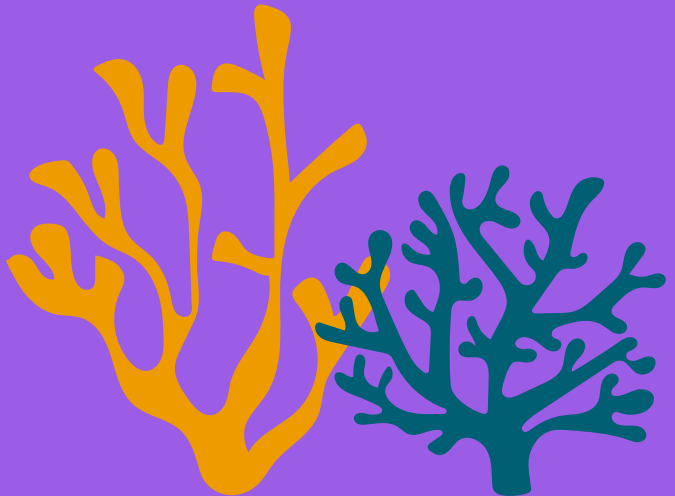
- LEGO® Serious Play® Starter Kit (Item No. 2000414): one per working group.

If LEGO® Serious Play® sets are not available, any standard LEGO® bricks or other modular construction materials (e.g. building blocks, connectors, recyclable materials) may be used, as long as elements can be physically connected and rearranged.

- Timer or visible clock.
- Larger central table or open surface for the final shared model.

**Printouts**

- Logic cards (Rules First / Profit First / People Together)
- Aurenos' Intervention cards (with rules printed on the same sheet)
- Aurenos' final check cards



# LEGO®-based activity design

If you are ready to design your own LEGO®-based activities, start simple and focus on the learning process rather than the final model.

**Begin with a clear learning objective**
Ask yourself what you want learners to understand, explore, or reflect on. A well-defined goal will guide the entire activity.

**Formulate a strong question or challenge**
In LEGO®-based learning, the quality of the question shapes the quality of thinking. Keep it open enough to allow multiple interpretations, but focused enough to give direction.

**Use the "question → build → share → reflect" cycle as your structure**
This ensures that building leads to meaning-making, not just activity.

**Encourage multiple solutions**
Avoid designing tasks with one "correct" outcome. The strength of this format lies in diversity of ideas and perspectives.

**Think about balance**
Provide enough structure so participants feel safe and understand the task, but leave enough freedom for creativity and personal expression.

**Plan for reflection**
The discussion after the build is where most of the learning happens. Prepare a few guiding questions in advance.

**Test and adapt**
Try your activity with a small group first. Observe what works, where participants struggle, and adjust accordingly.

**Finally, design with inclusion in mind**
Make sure your activity allows different ways of participating, so that all learners can engage and contribute.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