



## GENERAL OBJECTIVE

Understand the term **Resilience** and its relationship with the diversity of a system when facing **disturbances** and **changes**.

## SPECIFIC OBJECTIVES

- Introduce the term **Resilience** and understand the importance of its meaning.
- Explain the different **areas** in which it is useful for us to understand Resilience.
- Relate Resilience to **diversity** in general and to **biodiversity** in particular.
- Understand **Biodiversity** in relation to the ability of an ecosystem to survive environmental disturbances.
- Live in first person what it means the capacity of a system to **incorporate** the information of the different elements that make it up.

## CONTENTS AND DEVELOPMENT

### Bringing to light prior knowledge

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**Introduction:** About 10 min.

**Objective:** to contextualize the subject and the methodology.

**Leads and accompanies:** the teacher.



**Presentation of the activity** (it is possible that the answers are very few, it is necessary to help them to create an idea of what Resilience is unless they have been able to work on it previously):

*Today we will do an activity around the term **Resilience**. Before we start, let's go around:*

- *Do you know what Resilience is?*
- *Where does the term come from?*
- *What does it have to do with **natural systems** or their conservation?*

**Make sure they understand the definition:**

Resilience is the ability of a material, an organism, a system to **return to its initial characteristics** after suffering a disturbance.



## Dynamics

Proposal for an **initial collective intelligence activity**. This part of the activity can be done the day before the game, depending on the agility of the group to work in teams. We divide into groups:

- Write on a post-it three *key words* to describe what you think resilience is.
- Stick it on the *board*.
- We leave it *exposed* and when we finish the activity we will return to it.
- We don't talk about it or touch anything until afterwards.

## Incorporating knowledge

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Now we are going to experience biodiversity **first hand**, with a game (about 30 min.).

### Instructions for teachers:

- Move the **tables** as much as possible to leave an **open space** in the middle of the classroom.
- Read the **dynamics** of the activity.
- Print the **tiles for each galaxy** or write the characteristics on the board.
- Print the **tests** and check if they are suitable for your group.
- Have a part of the **board** ready to make the grid of "**weaknesses**", chalk and eraser (and post-its if necessary).



### Introducing the Game:

- Welcome and welcome to the ship "*Peaceful Future*" which transports diplomats from different galaxies to the XXXIV meeting for Interstellar Peace.
- We have transformed the classroom into a ship and you are *diplomats/ representatives* of four distant galaxies with very different physical and personality characteristics. This means that there are things you do very well... and others not so much!
- In the middle of the trip, you suffer a major **DISASTER!**
  - The commander suffers a *heart attack* and drifts away!
  - You have lost your "*ship commanded by a commander*" feature.
  - How do you think you can *continue the journey*?
  - You have **20 minutes** to solve it, that is, to find a way to command the ship as safely as possible... Good luck!
  - Ah...the Commander was from a galaxy that's gone...there's *no one else from that galaxy among the crew*.

# THE RESILIENT SHIP



## Start the Game:

- Remember that Peaceful Future is a diverse system: *each diplomat from each galaxy has physical and personality characteristics and this has assigned you certain roles within the ship.*
- We make 4 groups (assess if the class group allows such diversity) and distribute the cards (or read them) with the characteristics of each galaxy/group.

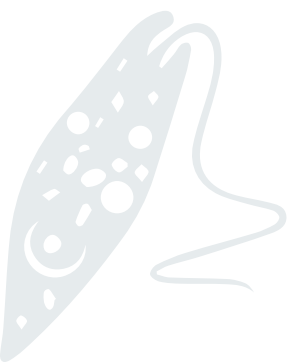
Before handing out the roles, look at the final table of **characteristics of each galaxy**, based on the idea of "privileges", that is, **abilities** and **opportunities** inherent to our origins and personality. The combination of these privileges is diverse. For example:

- **On a social level:** where I was born, who are my parents, what era I live in, role I occupy in my group in a consensual way, etc.
- **On a personal level:** what physical and psychological characteristics I have, and what level of acceptance it has in the society in which I live.

## The Game follows:

- Share and identify with the *given characteristics* and think if you would be a *good commander*, and why? What features are you missing? Write it in a grid on the board. 10 minutes.

Galàxia	What weaknesses do we have that make us unfit to be a commander?
NGC 4565	
LGS 3	
ANDROMEDA VI	
I ZWICKY 18	



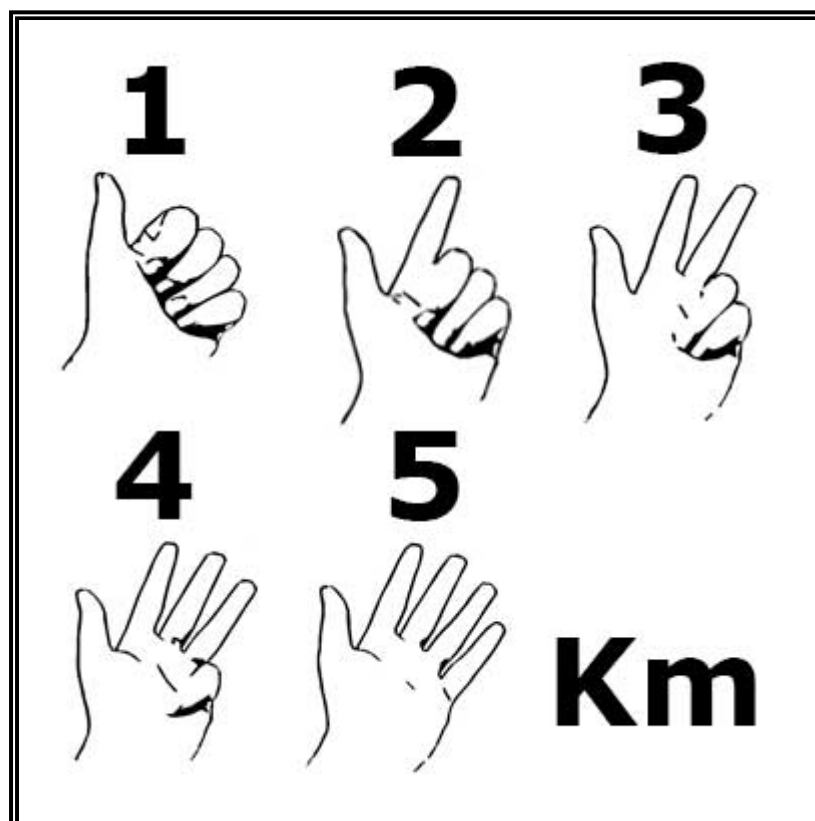
# THE RESILIENT SHIP



- **REMEMBER:** Since the commander was the only one from his galaxy on the ship, the proposal is to command the ship as a team.
- How do we choose the commanding team?
  - Passing **four tests**: the people who pass the tests will be the commanding team.
  - **BUT:** Each test is especially "suitable" for two of the four galaxies (see tests) and each galaxy can send **only one representative** to pass each test (think about your personalities), except for the last test.
  - Whoever passes the test first, enters the **commanding team**.

We attach simple test proposals that you can change according to the particularities of your group.

- **Test 1**
  - Solve a **hieroglyph**
  - **Ideal galaxies:** 1 and 3.
  - Who solved it first? **1st Command Team Member**

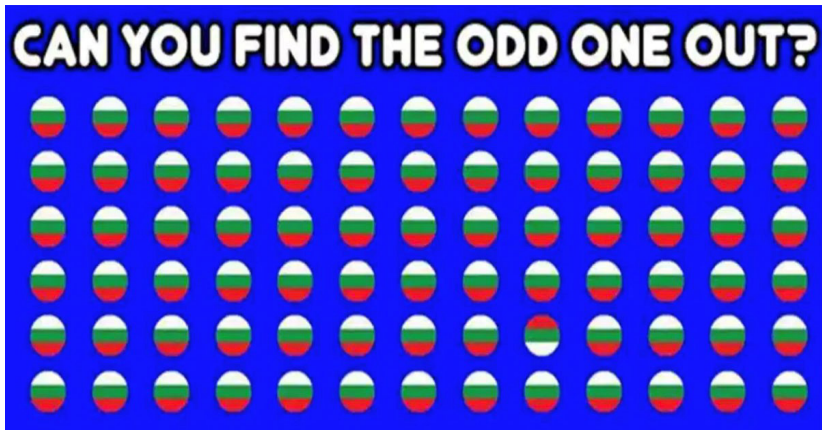


# THE RESILIENT SHIP



## ➤ Test 2

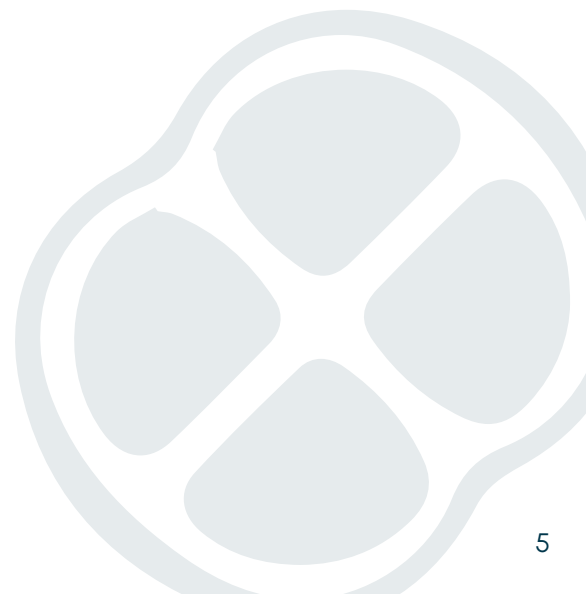
- Visual test
- Ideal Galaxies: Only 2 and 1.
- Who solved it first? 2nd member of the commanding team.



## ➤ Test 3

- Sudoku
- Suitable Galaxies: 2 and 4 only.
- Who solved it first? 3rd member of the commanding team.

		2		3	1			8
	4						1	3
8	1		7					
	3			5			6	2
4		7	3	8	6	9		1
6	5			2			8	
					5		7	9
2	7						3	
9			4	7		6		





## ➤ Test 4

- *Mind Connection* The two ideal galaxies form a circle and try to say as many correlative numbers (starting with 1) as they can without repeating. We make three attempts.
- *Ideal galaxies*: 4 and 3.
- *Who solved it first?* The galaxy that manages to say the most numbers wins and chooses the 4th member of the commanding team.

CONGRATULATIONS; you now have a Commander team  
and you have been able to continue with your interstellar mission!!!

If there is time, repeat the tests with other representatives and incorporate some modifications to generate **discussion**:

- In the middle of a test, the teacher invites the other galaxies to participate (first just one person... then two...).
- What tests have been solved before? Why do you believe?
- What happens when:
  - Do we allow people from **other galaxies** in? We increase the diversity of tools, talents, and gifts, and increase the chances of solving a problem. Therefore: **the resilience of a system is directly proportional to its diversity**.
  - And if we increase the **time** to solve the test? **Time brings out less visible characteristics or qualities of the system**.





## Consolidate learning

Energized/facilitated plenary by the teaching staff of about 15 min.

In a circle or sitting/from their usual places, we open a **round of questions** in relation to the game we have just played (we suggest you collect the results in colored post-its format or recording):

➤ *What happened? Have we found the **best commanding team**? Because?*

You can focus your thinking on:

- the role of the commander as an analogy of the **key species**, which if they disappear, put the survival of the ecosystem at risk.
- the **personalities/abilities** of each galaxy. '
- the importance of **teamwork**.

➤ *Now let's think about an **ecosystem** and different types of **disturbances** that could put it at risk, which ones come to mind? Examples: hurricanes, increase in temperature, sea level rise, forest fire, change of land use, etc.*

➤ *Is it the same to speak of **natural disturbances** as of **anthropogenic disturbances**?*

A **natural change (disturbance)** (for example, a forest fire) includes information from the natural system itself and can therefore adapt and live with it.

An **anthropogenic change** (for example, spillage of crude oil at sea or caused forest fires or increase in temperature due to the greenhouse effect, etc) can mean **drastic changes** in natural systems that do not have the necessary information to survive them.

➤ *What happens to an ecosystem with **high resilience** to a disturbance?*

➤ *And to one with **low resilience**?*

Relate it to what happened in the activity.

- **resilience** and **diversity** are linked.
- the importance of the **time** variable in the recovery of an ecosystem: the more time I give to a system, the more capacity it has to recover or adapt.

➤ *What relationship do you think this activity has with the **conservation of ecosystems**?*

## A final thought

Resilience is **applicable at every level of organization imaginable**: a molecule, a classroom, a work team, a species, a person, a state. What could a resilient person be? How should we do it on a personal level to be more resilient?



GALAXIES

GALAXY	COLLECTIVE / CULTURAL How are they collectively?	INDIVIDUAL Predominant characters? Potentialities and risks	
NGC 4565	Rationality Analysis Memory Element: Water Symbol: Eagle  Occupation: military	Leadership Requirement Perfectionism Global vision	Authoritarianism Intransigence Cold





## GALAXIES

GALAXY	COLLECTIVE / CULTURAL How are they collectively?	INDIVIDUAL Predominant characters? Potentialities and risks	
LGS 3	Emotion Intuition Quickness Adrenaline Element: Fire Symbol: Lion  Occupation: pilots	Dexterity Forcefulness Game Courage Focused vision	Bad temper Emotional attachment Recklessness Terse



## GALAXIES

GALAXY	COLLECTIVE / CULTURAL How are they collectively?	INDIVIDUAL Predominant characters? Potentialities and risks	
Andromeda VI	Bond Prediction and forecast Proactivity Element: Earth Symbol: Dog  Occupation: Doctor and me- chanics	Kindness Warmth Integration Knowledge	Lack of clarity Complexity Insecurity Chaos

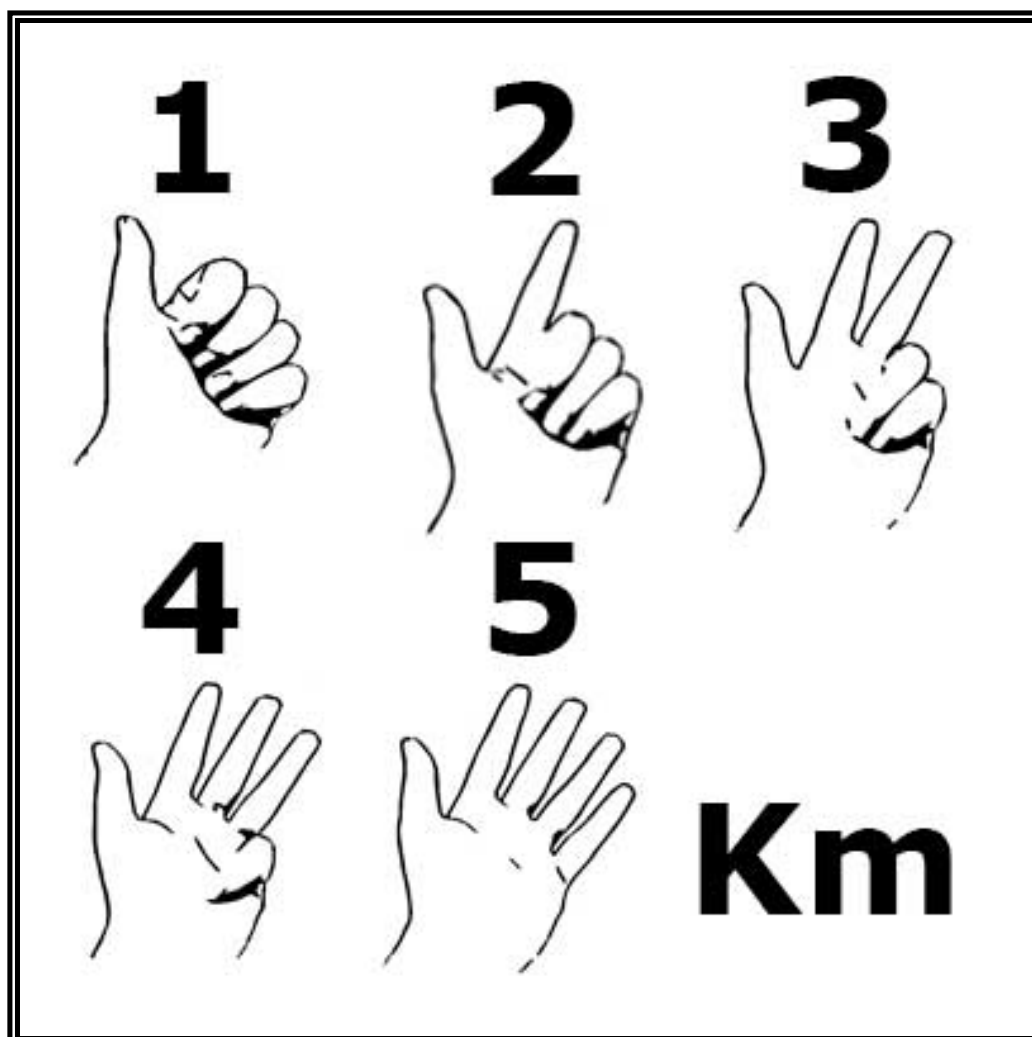


## GALAXIES

GALAXY	COLLECTIVE / CULTURAL How are they collectively?	INDIVIDUAL Predominant characters? Potentialities and risks	
<b>I Zwicky 18</b>	Magic Dream Art Beauty Community Element: Air Symbol: Hummingbird  Occupation: Holy man or wo- man (priest)	Eldership Connection Wisdom Dreams	Out of time Slowness Desattachment of the final result Complex language

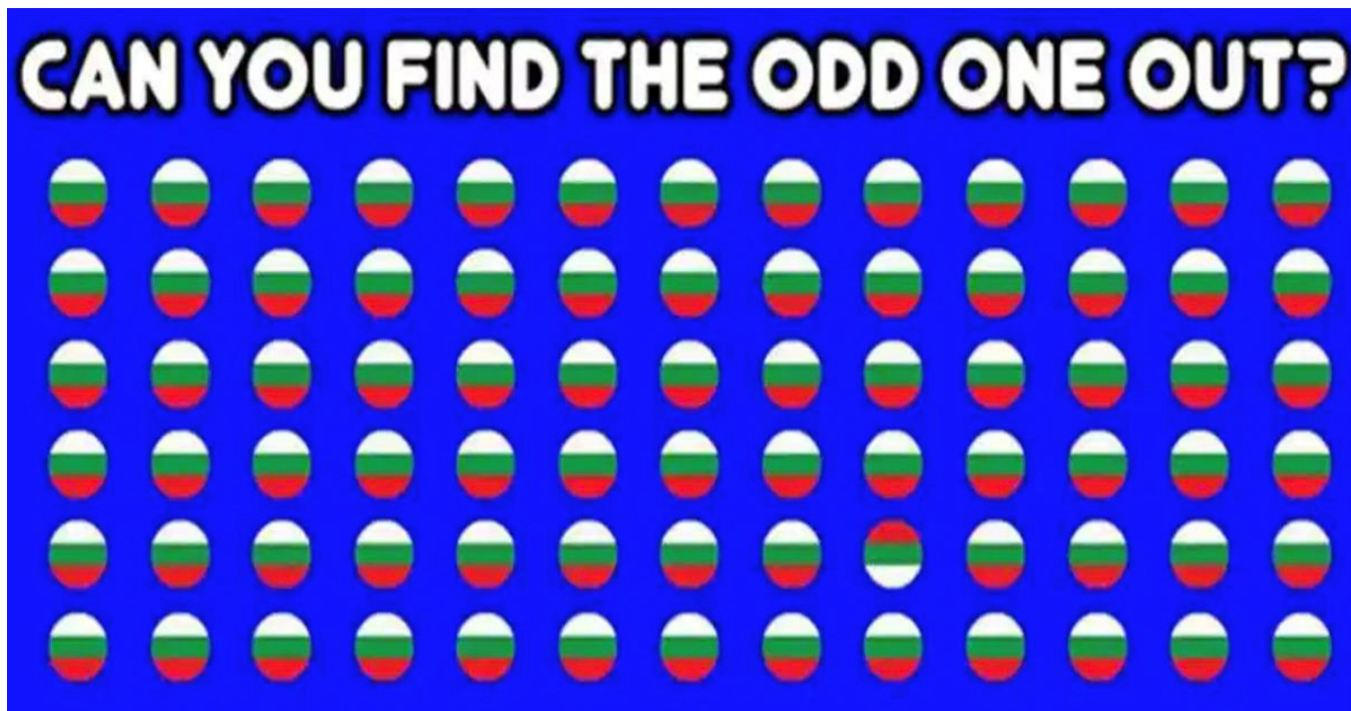


## TEST 1





## TEST 2





## TEST 3

		2		3	1			8
	4						1	3
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	3			5			6	2
4		7	3	8	6	9		1
6	5			2			8	
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# OCEAN NIGHT



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