



Impact of an Educational Proposal on the Knowledge
about Plastics and their Contamination in Grade-8
Students.

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1. Introduction

PLASTICS ...

have improve our health

causing enviromental problems

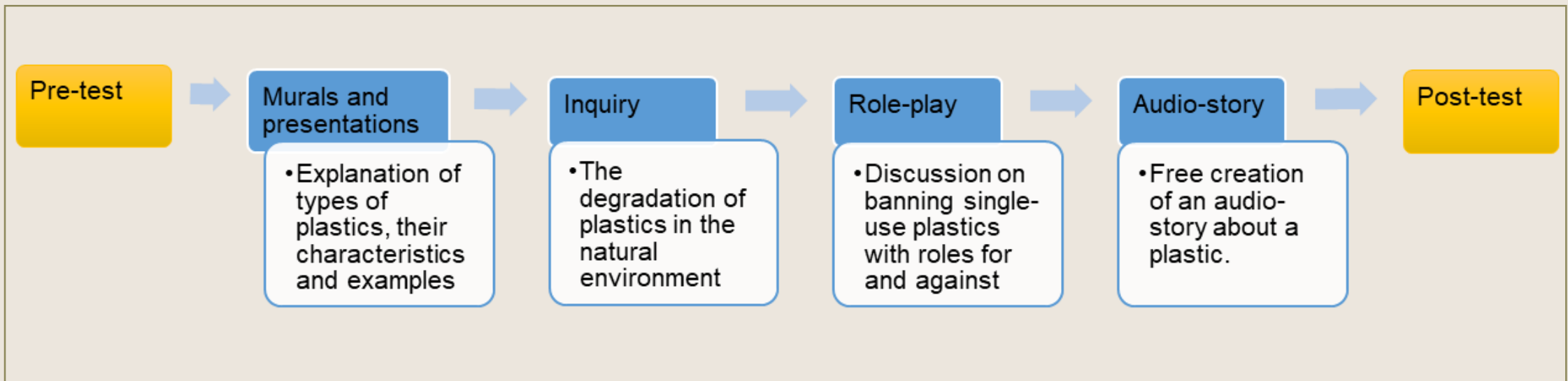
have improve our sanitation

causing consequences for the health

This commitment must start at school

2. Methodology

44 Spanish grade-8 (13-14 years) students from a high school in Malaga (Spain).
Chemistry programme. Two different class groups



2. Methodology

Survey items and answers options used for pre-test and post-test

Items	Answers		
	A	B	C
1. Where do you think the plastic comes from?	Plastic is extracted directly from nature	It is derived from petroleum*	It is produced by living animals and plants
2. Do you think all plastics are the same?	No, there are different types*	Yes, they are all the same	I do not know
3. Can all plastics be reused and recycled?	Yes, but not everybody recycles it	Yes, that is why all plastics are recycled	No, some do, some do not*
4. Can all plastics be used to make water bottles?	No, because some are difficult to extract	No, because some can be toxic*	Yes, because plastics are moldable
5. Plastic pollution is due to...	only because of the large number of plastics	to their low degradability, along with other factors*	to their low usefulness
6. What are single-use plastics?	Plastics that people use once and then throw away	The plastics that can only be used once*	All of them, since we should not reuse them.
7. How are microplastics formed?	From oil for use in very small things.	The environment creates very small fragments from larger plastic*	In recycling plants, as a previous step to make plastic.
8. The degradation of plastic...	It is very slow, and its characteristics hardly change over time*	It is slow; in a few weeks, it is degraded.	It degrades very quickly, in a few hours.
9. Plastic pollution affects the environment...	Only to the oceans	Only to living beings	To the entire planet Earth*
10. Plastics found in the sea may be...	Short time, because they degrade easily	Only at the surface	Up to thousands of meters deep*

3. Results

The Chi-square test indicates that both groups of students behaved similarly in the pre- and post-test.

The questions with the best increase in adequate answers were:

- Can all plastics be reused and recycled? (item 3)
- How are microplastics formed? (item 7)

The McNemar test show significant differences between the pre-test and post-test in:

- Do you think all plastics are the same? (item 2)
- Can all plastics be reused and recycled? (Item 3)
- How are microplastics formed? (item 7)
- Plastics found in the sea may be..., (item 10)

4. Conclusions

After the teaching-learning sequence on plastics and critical thinking, students improved their knowledge about plastics and pollution

The main progress in this topic was related to microplastics (item 7), recycling (item 3), pollution (items 5 and 10), and types of plastic (item 2).

We emphasise the importance of including this type of activity in the chemistry classroom to improve students' knowledge, argumentation skills and decision making because they are future citizen.

5. Acknowledgements

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6. References

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Thank you

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