

PROJECT PLANNING TEMPLATE for CLIL and Content-Rich Environments

Identification

Title	Mixtures in daily life
Authorship	Mercedes Saludes Tapia
With the support of	
School	INS Font del Ferro
CEFR Level (B2,C1,C2?)	A2
Grade	3r ESO
Content areas	Chemistry
Number of sessions	6
Teacher(s) involved	Mercedes Saludes
Key words	Mixtures, disolutions, homogeneous, heterogeneous , daily life, solubility , substances, methods of separating mixtures, lab material and kitchen material

INTRODUCTION TO THE PROJECT TEACHING SEQUENCE

With this project I want to show that the chemistry is not only learning a periodic table, theories, strange compounds names and many other things like these. Everything is chemistry and in Science class students will be able to understand their closest environment.

Do you think that chemistry is present in your daily life?

GOALS

1. Observe different solutions
2. Make hypothesis
3. Differentiate solutions and substance
4. Define solubility
5. Separate the components of a dissolution

HOW DO YOU KNOW STUDENTS ARE MAKING PROGRESS?

1. Prepare different homogeneous and heterogeneous mixtures and check their properties. Do the same with daily products (personal hygiene, household cleaning stuff, food, medicines, beverages...)
2. Discuss the differences and similarities.
3. Carry out experiments such as *Tyndall Effect* other look around through a magnifying glass to check which kind of matter are things made of. We can check the changes of the mixture with the temperature and draw a graphic.
Differentiate solutions and pure substances with the boil and melt point.
Discuss and classify the matter in a table.
Solve numerical exercises of matter composition.

4. Check the solubility of the solids and gases in water and observe the behaviour of the matter when the temperature changes. After, explain the behaviour the beverages like coke or beer when the temperature changes.
Discuss how the temperature in the Earth can change the water life.
5. Define saturated solution, the crystallizing method and other ordinary separation methods.

FINAL PRODUCT

What is the final product?

The final product consists in recording a video or presenting pictures of the work in the lab. We will carry out different experiments to distinguish different types of mixtures. The students will cook and prepare mixtures in their homes' kitchen, too.

The pupils must do a research about compounds and mixtures and elaborate an abstract.

KEY COMPETENCES

1	Communicative, linguistic and audiovisual competence	X
2	Mathematical competence	X
3	Interaction with the physical world competence	X
4	Cultural & artistic competence	X
5	Digital competence	X
6	Social and civic competence	X

7	Learning to learn competence	x
8	Personal initiative and entrepreneurship competence.	x

CONTENTS (Knowledge and Skills)

TOPIC-RELATED CONTENTS	TOPIC-RELATED SKILLS
1. Homogeneous and heterogeneous matter - Solutions and dissolutions : kinds, composition, states... - Methods of separation.	1-Comparing and contrasting different solutions in our daily life : food, household cleaning products, body care products.... -Elaborating a table to sort out the different products into homogeneous and heterogeneous mixtures. (spreadsheet) 2 Trying to distinguish the different substances in a mixture to complete the table (spreadsheet) - Checking how the temperature influences the solubility of solid and gas substances. -Drawing a graphic with the solubility of different substance vs temperature. -Using ICT tools to elaborate the final work and upload it onto the school's <i>moodle</i> platform. 3. Using different methods of separating mixtures in the lab (distillation, chromatography, evaporation, sublimation)

CONTENT-OBLIGATORY LANGUAGE

Science: Basic language related to chemical mixtures (molecules, mixture, homogeneous, heterogeneous, dissolution, solute, solvent, pure substance, compound, gas, solid, liquid) ; physical methods of separating compounds of a mixture (boil point and melt point, solubility, magnetic properties, size of the particles, evaporation, sublimation, filtering, distillation, chromatography, extraction, decantation, sieve, crystallization).

Lab material versus kitchen material: beaker, graduated cylinder, glass rod, funnel, mortar and pestle, magnet, spatula, scale, watch glass, volumetric flask, pipette, filter, evaporating dish, distillation flask, condenser, rubber ; kitchen scale, spoon, glass bottle, whisk, bol, strainer, whisk, cooking pot, measuring cups, measuring spoons.

Physical changes: evaporation, vaporization, melt, boil, sublimation.

Instructions: imperative and infinitive verbs.

Descriptive language: colours, texture, shapes, graphs,

Comparison language: this ... is more/less than..., ...-er than..., the most/the least, the-st, like/similar/same as..., (not) as as....

Describe changes, objectives, procedures....

Cooking basic language : recipe, stir, ingredients, to heat, to cool, glass, freezer, fridge, candy thermometer....

Classifying vocabulary : there is/ are .. types, kinds, sorts, classes, categories, varieties

PERSONAL and EMOTIONAL DEVELOPMENT

The students will use English in a different context from the one they are used to, realising at the same time that chemistry is always present in our life (clothes, food, cleaning products, other useful household products...) and understanding that safety is very important in both the lab and the kitchen.

Students learn to work in small heterogeneous groups (two or three people).

MATERIALS and RESOURCES

Chalkboard, smartboard, classroom's personal computer and projector, ICT classroom, cameras, students' smartphones, gamification tools, quizzes, youtube videos and other channels , pinterest, different webs and simulators, web 2.0 tools,

coursebook and workbook, lab and lab material, kitchen and kitchen material, magazines and cookbooks, food and daily products, english language infographics (from pinterest) .

<https://es.pinterest.com/pin/518828819556873845/>

<https://es.pinterest.com/pin/518828819556873721/>

<https://es.pinterest.com/pin/518828819556517865/>

<https://es.pinterest.com/pin/518828819554142014/>

<https://es.pinterest.com/pin/154177987223092969/>

REFERENCES

Pinterest

<http://www.inquiryinaction.org/classroomactivities/topic.php?topic=Solubility>

<http://www.vtaide.com/png/matter.htm>

<http://makezine.com/laboratory-18-colloids-and-suspensi/>

<http://www.elortegui.org/ciencia/datos/3ESO%20CLIL/exercises/solved/Solved%20concentration%20exercises.pdf>

<https://phet.colorado.edu/en/simulation/legacy/soluble-salts>

<http://www.bbc.co.uk/education/guides/zrr2pv4/revision>

COMMENTS

ACKNOWLEDGEMENTS

GEP, INTERNET AND MY MATE OLGA RODRIGO (ENGLISH TEACHER)

UNIT OVERVIEW

Session	Activities	Content-obligatory Language	Timing	Skills Reading Writing Listening Speaking Interaction	Interaction T-S S-S S-Expert S-World	CMC	Assessment Peer assessment Self-assessment Teacher assessment ...
1	Define homogeneous and heterogeneous matter and mixtures.	Basic language related to Chemical Mixtures	5'	Listening Interaction	T-S	Yes	
	Sort different pictures from cookbooks and magazines into homogeneous and heterogeneous in a table.	Description and comparison language	20'	Interaction Listening Speaking	S-S S-W T-S		Self -assessment Peer assessment Teach assessment
	Do the same with chemical products : $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ solid and in different concentration solutions, bleach, ammonia, NaOH solid and in solution, minerals and rocks.	Basic language related to Chemical Mixtures. Instructions Description and comparison language	25'	Interaction Listening Speaking	S-S S-W T-S		Self -assessment Peer assessment Teach assessment
	Explain and describe the results	Description and comparison language Basic language related to Chemical Mixtures.	5'	Listening Speaking Writing	T-S S-S		Self -assessment Peer assessment Teach assessment

	Do the same at home with the food that you keep in your fridge. Record this task with your smartphone and share it with your classmates.	Description and comparison language Basic language related Chemical Mixtures.	30'	Interaction Speaking	S-W	yes	Self-assessment Teach assessment
2	Make different experiments with colloidal dispersions and dilute beverages such as chocolate shake, coke and orange juice. Try different tests to find out their properties, e.g. show the diffraction with a laser lamp.	Description and comparison language Basic language related Chemical Mixtures. Lab material vocabulary Instructions	40'	Interaction Listening Speaking	T-S S-S S-W	yes	Self-assessment Peer assessment Teach assessment
	Explain and describe evidences	Describe changes, objectives, procedures.... Comparison language	15'	Speaking Writing Listening	T-S S-S		Self-assessment Peer assessment Teach assessment
	Do the same at home with personal care products and household cleaning products. Record this task with your smartphone and share with your classmates.	Description and comparison language Basic language related Chemical Mixtures. Kitchen material vocabulary Instructions	30'	Interaction Speaking	S-W	yes	Self-assessment Teach assessment
3	Define solute and dissolvent in a dissolution and teach different ways to calculate the compounds' concentration in a dissolution	Basic language related to Chemical Mixtures. Instructions	25'	Listening Writing Speaking	T-S		
	Solve different concentration activities	Maths language Instructions Lab material vocabulary	30'	Interaction Listening Writing Speaking Reading	S-S T-S	yes	Self-assessment Peer assessment Teach assessment

4	Think about the influence of the temperature in the solubility of solid and gas into a liquid.	Description and comparison language	5'	Listening Speaking	T-S S-S S-W	yes	Self-assessment
	Heat solutions and pure substances until they boil. Make a graphic showing T vs t and describe the results.	Instructions Description and comparison language Basic language related to Chemical Mixtures.	30'	Interaction Writing Speaking Listening	S-S S-T		Self-assessment Peer assessment Teach assessment
	Add a big amount of salt to a solution and heat it to show that the solubility increases when the temperature increases. Explain the results.	Instructions Description and comparison language Basic language related to Chemical mixtures. Lab material vocabulary	20'	Interaction Listening Speaking Writing	S-S T-S		Self-assessment Peer assessment Teach assessment
	Now you must show at home that the solubility of gas decreases when the temperature increases. You can try it with soda. Record this task with your smartphone and share with your classmates. Explain the results	Instructions Description and comparison language Basic language related to Chemical Mixtures. Kitchen material vocabulary	30'	Speaking Interaction	S-W		Self-assessment Teach assessment
5	Separate the different compounds of a mixture. We must separate a heterogeneous mixture of salt + iron + iodine solid + sand. Write an abstract with the lab material, and make a drawing of the assembly and the procedure. You must use the physical properties of the compounds. You can finish the report at home.	Instructions Description and comparison language Basic language related to chemical mixture. Lab material vocabulary	55'	Interaction Writing Speaking Listening Reading	T-S S-S S-W		Self-assessment Peer assessment Teach assessment

6	Review the videos and reports	Instructions Description and comparison language Basic language related to chemical mixture. Lab and kitchen material vocabulary	35'	Writing Speaking Reading Listening	T-S S-S	Yes	Self-assessment Peer-assessment Teach-assessment
	Watch some videos	Discussion	20'	Interaction	T-S S-S S-W	Yes	Peer-assessment Teach-assessment