

**Middle school**  
**Class: 1st year**  
**Science Education**  
**Content: Mixtures and substances**

## MODULE TITLE

**Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques**

## ABOUT THE MODULE

<p><b>Anticipated problems and solutions (related both to the module and to the lesson II= lesson PLAN)</b></p>	<p><b>Content:</b>          Didactic research shows that there are some conceptual “knots” in this topic. Therefore I create a sequence of activities with the aim of dealing with the following common misconceptions that the students could have and that could endure.</p> <p><b>POSSIBLE MISUNDEstandINGS</b></p> <ol style="list-style-type: none"> <li>1) non mixture is something natural (in which man doesn’t take part);</li> <li>2) non mixture is something simple (in which man doesn’t take part);</li> <li>3) non mixtures are raw materials;</li> <li>4) mixture is considered only if it is homogeneous*;</li> <li>5) mixture is considered only if it is non homogeneous*;</li> <li>6) The difference between homogeneous and non homogeneous mixture coincides with the degree of “mixing”;</li> </ol> <p>*It means that learners usually don’t consider with the name mixture both the homogeneous and the heterogeneous ones.          See also <a href="http://Archiv.ipn.uni-kiel.de/stcse/">Archiv.ipn.uni-kiel.de/stcse/</a></p>
	<p><b>Communication:</b>          The content is set out during the beginning of the second part of the first year of middle school, when the past simple and the future tense aren’t usually taught at school. As a consequence, we will preferably use sequences of events (first I do... then ... I do...)</p> <p>Moreover, as language scaffolding, the teacher gives printed vocabulary and glossary sheets and labels the key words on the PowerPoint slides.</p>
	<p><b>Cognitive skills:</b>          Before starting the lesson the teacher decides on the pairs for pairs activities with students that are “tutors” to learners that have difficulties.</p> <p>The corrections of assessment at the beginning of lesson III is used to check the achievement of learning goals, as consolidation of outcomes and to evaluate if additional scaffolding or materials should be adopted</p>
	<p><b>Culture:</b>          At the end of the Module, acid rain is introduced as an environmental-global problem, considering cause/effect relationships, but without considering the chemical reactions involved, because the learners don’t have the necessary prerequisites to analyse this process from a chemical point of view.</p>
<p><b>Didactic and</b></p>	<p>Analogical reasoning is a form of figurative thought by which two or more</p>

<p><b>methodological Framework</b></p>	<p>subfields can be described by the same structure. When teaching we often use analogies. (<a href="http://www.physikdidaktik.uni-karlsruhe.de/kpkmaterialfremd.html">www.physikdidaktik.uni-karlsruhe.de/kpkmaterialfremd.html</a>) For upper level learners in physics and science, the same analogical structure can be used to compare and explain different fields. However, for younger learners some pre-mental categories need to be formed The use of analogy derives from the fact that human figurative thought leads to structuring of different phenomena with the help of the same recurring experiential gestalts, called Force Dynamic Gestalts (FDGs) (Hans. U. Fuchs, <a href="https://home.zhaw.ch/FDG_Modena">https://home.zhaw.ch/FDG_Modena</a> ). FDGs are structured on the basis of image schemas (i.e., recurring patterns of experience or experiential gestalts) that are projected metaphorically onto objects of human thought. The basic aspects of FDGs created in this manner are quantity, quality (intensity) and force (or power). By employing FDGs, different phenomena are made similar to the human mind and for this reason they can be imaged and understood by our mind because we still have the mental category to model the concept.</p> <p>From the methodological point of view I try to integrate the CLIL approach indicated in the TKT course with some results of science didactic research:</p> <p>Bartolini Bussi M.G, Corni F., Mariani C. &amp; Falcade R. (2012) Semiotic Mediation in Mathematics and Physics Classrooms: Artifacts and Signs after a Vygotskian Approach Special Issue on Vygotsky, Electronic Journal of Science Education 2012</p> <p>2012 - H. U. Fuchs, F. Corni, E. Giliberti, C. Mariani (2012). Force dynamic gestalt of natural phenomena: teaching the concept of energy. In: Bruguière, C., Tiberghien, A., &amp; Clément, P. E-Book Proceedings of the ESERA 2011 Conference: Science learning and Citizenship. Lione, 5-9/9/2011, p. 31-37, Lione: ESERA, ISBN: 9789963700448</p> <p>2012 - C. Mariani, F. Corni, E. Giliberti (2012). Extended abstract: A didactic path for age 5-8 on the concept of extensive quantity using a story as a cognitive tool. THE JOURNAL OF EMERGENT SCIENCE, vol. 3, p. 33-35, ISSN: 2046-4754</p>
<p><b>LEARNERS and further reflections about teaching-learning process</b></p>	<p>Next year I believe that I'll teach students who have been attending CLIL courses for 5 years at primary school. At the moment I don't have further information about them. According to my teaching experience I have no doubt the classroom will not be homogeneous and with BES students. Hence, I try to plan and teach by including all learners considering a lot of scaffolding and possible additional differentiated materials according to a program of individualisation considering the actual learners' need. The assessment is branched out (formal, informal, individual, pair, oral, written, hand work, ....) and graded.</p> <p>As a consequence I have prepared each lesson appropriately organised with images, key words in coloured and bold letters, recursive steps, work in pairs with tutoring, visual organizers, breaking down tasks into small steps. Moreover, I allow time for learners to avoid misunderstandings and to ask questions about the tasks, encouraging interactive speaking and reading. A lot of points of feedback are included during the lesson. In addition, I have planned to prepare the lesson in PWP (or eventually to transform it in e-book). Anyway, my choice of preparing the lesson on digital support also gives me the opportunity of recording my school lesson on the interactive whiteboard with audio-video associated to each slide. This can be useful for DSA/BES students and it is an</p>

Author: Cristina Mariani

	<p>opportunity for review for all learners and especially for learners that weren't at school during the lesson. Furthermore, the choice of using virtual material allows it to be easily rearranged and adapted: for example only some parts can be chosen such as limited tasks, limited maps... helping students that need personalisation or individualisation to focus on a selected topic. Citizenship Skills are developed considering both local and global problems. So far, students with special needs can approach the problem considering local and or daily contexts that can be easily analysed and studied by them.</p> <p>Laboratory activities (concrete or virtual) are inserted in each lesson to help understanding of content and conceptualisation.</p> <p>From a linguistic point of view, language scaffolding is introduced during each lesson and during assessment, as word banks, glossaries, writing frames, model sentence... Code switching, use of L1 both by teachers and learners for specific purposes is considered, especially when HOTS cognitive and linguistic requests are expected (to justify, to explain, to check understanding, to support students with special needs..)</p> <p>Scaffolding is used to create a classroom where there is interaction and collaboration, and to support learners so that they can understand new content, develop new language and cognitive skills.</p> <p>Activities, even if inclusive, are never trivial and allow us to stimulate learning of higher skills .</p> <p>Empowering activities are included to activate higher skills and motivate learners ( See the grid of lesson plan )</p>
<b>MODULE TITLE</b>	<p><b>Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques</b></p> <p>The Module makes reference to the school science curriculum (see <a href="http://www.icaldenomattarello.it/didattica/piani-di-studio.html">www.icaldenomattarello.it/didattica/piani-di-studio.html</a>) according to “ Piani di Studio Provinciali”</p>
<b>NOTES</b>	<ul style="list-style-type: none"><li>a) I tend to use a laboratory approach. Because of this, I plan two hours for each lesson</li><li>b) I present in detail the second lesson of the Module. (What I call LESSON PLAN)</li><li>c) Before the grid of lesson plan, I show a brief synthesis of the previous lesson (lesson I) thinking that the lesson I summarise can give a better overview of my teaching planning and work.</li><li>d) All didactic material as glossary, homework, sheets for pair work or group work are inserted inside the PWP I have made as whole teaching-learning material</li><li>e) Inside the PWP I use recurring symbols to help students to identify the activities</li></ul>

## Lesson plan

<b>School</b>	<input type="radio"/> Primary	<input checked="" type="radio"/> Middle	<input type="radio"/> High
<b>Year / Class</b>	X1	<input type="radio"/> 2	<input type="radio"/> 3
<b>Subject :</b>	Mixture and solutions		
<b>CLIL language</b>	<b>English</b>		
<b>Teacher / Teaching team profile</b>	Teacher's role:	<input checked="" type="radio"/> Main Teacher <input type="radio"/> Co-teacher <input type="radio"/> Other: _____	Subject taught: <input type="text"/> Science <input type="text"/>
	Teacher's role:	<input type="radio"/> Main Teacher <input type="radio"/> Co-teacher <input type="radio"/> Other: _____	Subject taught: <input type="text"/>
<b>Student group profile (general)</b>	CEFR Level:	<input checked="" type="radio"/> A1 <input type="radio"/> B1	<input type="radio"/> A2 <input type="radio"/> B2 <input type="radio"/> C1 <input type="radio"/> C2
		<input checked="" type="radio"/> Experiences of CLIL <input type="radio"/> English mother tongue <input type="radio"/> Other mother tongue	<input type="radio"/> Migrant background <input type="radio"/> Special Educational Needs : ____ <input type="radio"/> Other: _____
<b>Timetable fit</b>	<input type="radio"/> Module <input checked="" type="radio"/> Lesson	Previous lessons: pure elements and mixtures	
		2. LESSON PLAN Future lessons: 3. Filtration technique 4. Chromatography of felt pens 5. The concept of concentration and density 6. Can anything be in a solution? (Relation between solubility and solvent). Local and global considerations: acid rains and effects on monuments (on monuments in Trento; on limestone rocks, on leaves of trees,... cause –effects relationships) 7. Additional lesson as empowering with a project work (see point recovering and powering)	
<b>Resources &amp; tools</b>	This lesson is an original one, taking some suggestions from the following		

	<p>resources and tools:</p> <ul style="list-style-type: none"> <li>• TKT Course (Cambridge English)</li> <li>• IPRASE materials given during the course</li> <li>• <a href="http://www.chem4kids.com/files/matter_solution.html">http://www.chem4kids.com/files/matter_solution.html</a></li> <li>• <a href="http://www.mheducation.ca/school/applets/bcscience7/mixtures/bcscience7_mixtures.swf">http://www.mheducation.ca/school/applets/bcscience7/mixtures/bcscience7_mixtures.swf</a></li> <li>• G. Sciolla; M:A. Spezziga (2006) I miscugli e le sostanze La Chimica nella scuola. Gennaio-Febbraio 2016</li> <li>• Ck12 .org</li> <li>• Interactive board</li> <li>• PWP</li> <li>• Minddomo</li> <li>• Edmodo</li> </ul>
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	Relational Competencies	Subject	Language
<b>Students' prior knowledge, skills, competencies</b>	Work in pairs Work in group	Properties of matter Temperature and hot	Present simple Compare/contrasting Describe ( This is..) Cause effect: why... because ;. First,... second,... then...

<b>Learning Outcomes expected for this lesson</b>	<p><b>Content:</b></p> <p><u>Know:</u></p> <ul style="list-style-type: none"> <li>• <i>reordering disciplinary vocabulary and definitions;</i></li> <li>• <i>distinct properties of mixtures and their unchanging components;</i></li> <li>• <i>difference between homogeneous (solution) and heterogeneous mixtures.</i></li> </ul> <p><u>Be able to</u></p> <ul style="list-style-type: none"> <li>• <i>identify, compare, classify solution/ pure substances/ mixtures;</i></li> <li>• <i>observe using senses;</i></li> <li>• <i>make prediction**;</i></li> <li>• <i>use knowledge;</i></li> <li>• <i>process knowledge;</i></li> <li>• <i>cooperate with others</i></li> <li>• <i>invent a general “abstract model” with the help of scaffolding.</i></li> <li>• <i>solve a problem, deciding how to work out a fair text in science **</i></li> </ul> <p style="text-align: center;"><i>** tested in an additional activity proposed to a selected group</i></p> <p><u>Be aware</u></p> <ul style="list-style-type: none"> <li>• <i>that the pure substance and mixture is a general model of reasoning and classification</i></li> <li>• <i>of the importance of cooperation in group</i></li> <li>• <i>of the importance of observations and fair texting</i></li> </ul>
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## **Communication**

### Vocabulary

- pure, mixture, homogeneous, heterogeneous, substance , to put together, to separate

### Structures

I think it's ... I conclude ( I can say/ I can't say ) ... ) /

I observe ... I conclude / I can say...

they are ... because I separate / .....I don't separate

It is / They are the same as before

First I do ... then I do...

- Communicative functions

Defining

Describing a process

(I think that...)

Explain a reasoning (answer requested in L1; L2 is expected by very few learners)

## **Cognition**

- *identifying pure substance vs mixture*
- *defining the concept of pure substance and mixture*
- *classifying pure substances and mixture according to different criteria using a T-chart*
- *reasoning*
- *hypothesising*
- *follow a sequence of instructions and reading/using a flow diagram*
- *decide a sequence of instructions \**
- *generalizing (abstracting)*
- *invent an experiment( following some indication of the teacher) \**  
*to be aware of fair texting \**  
*\* tested in an additional powering activity proposed to a selected group*

**Culture\*\* (this component is developed at the end of the Module but not in the lesson II)**

### know

- the local and global problem about acid rain ( a kind of dangerous solvent);

### able to

- identify cause-effect relationships;

### be aware

- about the causes (due to air pollution,...) and how to reduce this problem.

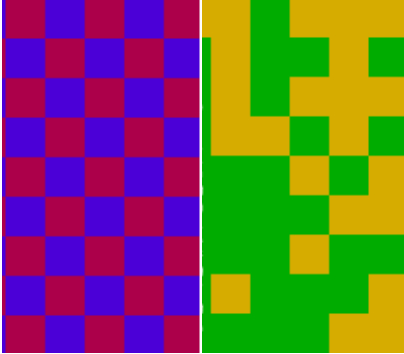
\*\* learning objectives related to Culture are not texted in this lesson because they are developed in other lessons of the Module

<p><b>Methodology</b></p>	<p>We will arrive at collective definitions guided by the teacher after pair and group work.          Visual operative indications will be used to support language comprehension.          Lessons of 55 minutes are avoided. All lessons are of two hours (Lesson II consists of 55'+55' together) to create a disciplinary and linguistic immersion and to promote laboratory and hands on -mind on activities</p>
<p><b>Homework</b></p>	<p>Students have to insert images about the content treated during class work, thus I can monitor the achievement of the main disciplinary objectives: distinguishing between homogeneous and heterogeneous mixtures. The request of the image makes it possible to ascertain the understanding of the content without interference and possible obstacles due to language as a request for a definition could be. Moreover I have given this homework because I can test with it basic level cognitive skills (LOTS).          For all these reasons it is inclusive and graduated.          On the other hand, writing a caption, even if providing scaffolding, checks high linguistic, content and cognitive competencies (HOTS). It is a challenge for students, exciting them and improving their possibilities. Intentionally, the task is designed to need a formal appearance: in fact the students have to directly edit their homework (they have a responsibility) modifying the stock material of the teacher and publishing their slide into the public domain (by using a platform such as Edmodo for example).</p>
<p><b>Recovering and powering</b></p>	<p>The aspects of recovery and scaffolding have been explained in the module grid because I use strategies that are implemented in each lesson. (See <b>LEARNERS and further reflections about teaching-learning process</b>)</p> <p>A specific activity will be offered to a selected and restricted learner group for motivating, upgrading and empowering them.          Two additional hours are expected to be added at the end of the Module.          The “straightening” is a deepening process and learners have to set up a laboratory activity following some indications provided by the teacher but they have to use their creativity too.</p> <p>Recovering and Powering: depth analysis project work group  <b>TASK</b>          The selected students will have to perform a simple laboratory experiment and justify their choices in response to the following task: "considering the experiments we observed and discussed in classroom (both laboratorial and virtual with simulations) in lesson 2, now <u>project an experiment to slow down</u> or <u>speed up</u> the separation of a mixture (you can choose evaporation or another <u>separation method</u>, as you prefer). Indicate the <u>parameters</u> that you want to <u>change</u>, run the experiment and <u>explain</u> the <u>reasons</u> for your choice. You can use L1 / l2 code switching".          Take care as your school mate will be the “scientific commission” who, using a blank sheet, will evaluate your project!!!</p> <p>To answer the question, considering evaporation, for example, the students have to introduce concepts learned in the previous modules as heat and state</p>




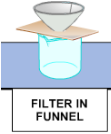



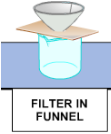



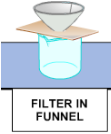
	<p>of matter. So far, in this “project laboratory work”, they have to connect the new content to previous content and language.</p> <p>With these activities all the learner objectives can be tested, even the higher ones such as making predictions, problem solving, hypothesising, deciding a sequence of instructions, being aware of the importance of fair testing. This activity will be used to check what learners are actually learning and can be used by the teacher as further opportunity for repeating, reviewing and revising all the teaching-learning process.</p>
<p><b>Formative informal assessment</b></p>	<p>This assessment is done as part of the teaching and learning process. Formative assessment is done constantly during the lesson to check the learners’ objectives ( Content, Communication, Cognition*) by:</p> <ul style="list-style-type: none"> <li>• observing pair and group work,</li> <li>• collecting data such as sheet pair works, and</li> <li>• verbally interacting during the collective discussion,</li> <li>• correcting the homework given at the end of lesson I.</li> </ul> <p>This homework has the function of:</p> <ol style="list-style-type: none"> <li>1) motivating them;</li> <li>2) checking if learners: a) know some key disciplinary words; b) if they put in correct relation observation/ cause –effect; identify – classify pure substance/ mixture)</li> </ol> <ul style="list-style-type: none"> <li>• Cooperation with others checked observing classroom work</li> </ul>
<p><b>Formative formal assessment</b></p>	<p>This assessment is done as part of the teaching and learning process. It is done to find evidence of learning in individual learners. In this assessment a self-assessment is introduced (even if it is usually considered as formative assessment).</p> <p>Both formal and formative assessment is used to evaluate the learner. To explain the reason why I introduce each question in the assessment, I immediately compare, by means of a table, objectives and tasks</p> <p>Uses of images and visual organiser are introduced to understand tasks and to encourage their answers even if they don’t understand the language but they know the content. Answers in L1 are accepted</p> <p>The assessment is graded with LOTS and HOTS tasks</p> <p>DSA students could need further time and the tasks read by the teacher. DSA and BES students will be considered according to their actual difficulties and needs. For examples according to the PEP or PEI project these students could answer orally and some questions could be designed with closed responses or modifying some tasks.</p> <p>The assessment criteria are linked to the “can do statement”, so far as they are linked to the learning outcomes.</p> <p>According to them, I suppose students can reach 3 levels from low to high</p> <p>Low Level: the student reach only some LOTS competencies;</p>



	<p>Middle Level: the student reach all the LOTS competencies and some HOTS competencies;                  High level: the student reach all the LOTS competencies and almost all or all the HOT competencies</p>	
<b>Formal assessment</b>		
<b>Learning outcomes</b>	Assessments	Texts
<p><b>Content</b>  <u>Known:</u></p> <ul style="list-style-type: none"> <li>• Records disciplinary vocabulary</li> <li>• Distinct properties of mixtures and their unchanging components.</li> <li>• Difference between homogeneous mixtures (solution) and heterogeneous mixtures</li> </ul> <p><b>Cognition</b></p> <ul style="list-style-type: none"> <li>• identifying pure substance vs mixture</li> <li>• defining the concept of pure substance and mixture</li> </ul> <p><b>Communication</b>  <u>Vocabulary</u></p>	<p><i>CAN Record disciplinary vocabulary</i></p> <p><i>CAN distinguish properties of mixtures and their unchanging components.</i></p> <p><i>CAN identify definitions</i></p> <p><i>CAN recognise and use disciplinary names and vocabulary of comparing</i></p>	<p>1) DELETE THE INCORRECT NOUN                  WHAT is a mixture?                  A mixture is what is formed mixing together ( <u>0/1/2/3</u>) or <u>more/ less</u> “substances”.</p> <p>2) FILL IN and choose between higher or less</p> <p>A salad _____ is a _____(0)_____</p> <p>In an _____(1)_____ mixture we can see the materials put together                  Solutions are groups of molecules that are mixed. Solutions are _____(2)_____ systems.                  Everything in a solution is well mixed.</p> <p>Heterogeneous _____(3)_____ have a little more of one thing (higher / less _____(4)_____) in one part of the system when compared to another.</p> <p>[Correct answers 0 = mixture 1= heterogeneous                  2 = homogeneous 3= mixtures 4=</p>

		concentration]
<p><b>Content</b>  <u>To be able to</u></p> <ul style="list-style-type: none"> <li>observe using the senses</li> <li>use knowledge</li> <li>identify, compare, solution/ mixtures/</li> </ul>	<p><i>CAN observe using senses</i></p> <p><i>CAN use knowledge</i></p> <p><i>CAN identify and identify/compare solution/ mixture</i></p> <p><i>CAN recognise content vocabulary</i></p>	<p>3) Read and Compare the <u>two images</u> and fill in with is or isn't</p> <p>Image 1 : sugar + water . Sugar dissolves .</p> <p>Image 2: sand + water . The sand sinks to the bottom.</p> <p>Both are mixtures, but only one can also be called a solution.</p> <p>Sugar + water ___(1)___ a solution  Sand + water ____ (2)___ a solution</p> <p>[ correct answers 1 = is ; 2 = isn't</p>
<p><u>To be able to identify, compare, classifying</u></p> <p>using knowledge</p> <p>processing knowledge</p> <p>reasoning/ generalizing (abstracting and modelling)</p> <p><b>Communication</b>  To be able to explain a complex reasoning ( requested in L1)</p>	<p><i>CAN identify, compare, classify, use knowledge and process knowledge to model</i></p> <p><i>CAN explain a complex reasoning</i></p>	<p>4) WHICH FIGURE CAN BE THE MODEL OF A SOLUTION (homogeneous mixture) AND A MODEL OF MIXTURE?  Figure A is the model of _____  Figure B is _____</p>  <p>FIG. A                      FIG B</p> <p><a href="http://www.chem4kids.com/files/matter_solution.html">http://www.chem4kids.com/files/matter_solution.html</a>  Explain your answers (Choose L1 or L2 or both)</p> <p>Fig A is _____ because _____ .....</p>
<p><b>Known</b>  invent a general model giving a scaffolding</p> <p><b>Cognition</b></p> <ul style="list-style-type: none"> <li>generalizing</li> </ul>	<p><i>CAN generalise and abstract</i></p>	<p>5) Observe “ models” in exercise 4.  Create a model for a pure substance.</p> <p>Draw it</p>

<p>( abstracting)</p>		
<p><u>To be able to</u></p> <ul style="list-style-type: none"> <li>• <i>classify</i></li> </ul> <p><b>Cognition</b></p> <ul style="list-style-type: none"> <li>• <i>classifying pure substances and mixture according to different criteria using a T-chart</i></li> <li>• <i>using a diagram</i></li> </ul>	<p><i>CAN classify using a T chart diagram</i></p> <p><i>CAN use a diagram</i></p>	<p><b>6) Classify with a T-chart diagram the list of pure substance and mixture :</b>  oxygen = ossigeno, air= aria, distilled water= acqua distillata ; sea water = acqua di mare; gold=oro , milk=latte, sand= sabbia , gasoline= benzina, salt= sale, sugar= zucchero, juice= succo , iron= ferro; nitrogen = azoto.</p>
<p><b>Communication</b></p> <ul style="list-style-type: none"> <li>• <u>Vocabulary</u></li> <li>• <u>Structures</u> ( I observe ... I can say ..)</li> <li>• <u>Communicative functions</u> (describing a process)</li> </ul> <p><b>Cognition</b></p> <ul style="list-style-type: none"> <li>• <i>reasoning</i></li> <li>• <i>use knowledge</i></li> </ul> <p><b>communicative function and cognition</b></p> <ul style="list-style-type: none"> <li>• <i>follow a sequence of instructions and reading/using a flow diagram</i></li> </ul>	<p><i>CAN recognise vocabulary and use structures and communicative functions</i></p> <p><i>CAN use knowledge</i></p> <p><i>CAN make a reasoning</i></p> <p><i>CAN follow a sequence of instructions and reading/using a flow diagram</i></p>	<p><b>6) Think of your experience :</b></p> <ul style="list-style-type: none"> <li>• you put in milk and chocolate,</li> <li>• then you mix.</li> <li>• Then you wait some minutes. What happens ?</li> </ul> <p>a)Put the Images in the correct order in the flow diagram  b) fill in the blank</p> <div data-bbox="868 1218 1449 1429" style="border: 1px solid black; display: flex; justify-content: space-around; padding: 10px;"> <div style="border: 1px solid black; width: 50px; height: 50px; display: flex; align-items: center; justify-content: center;">A</div> <div style="border: 1px solid black; width: 50px; height: 50px; display: flex; align-items: center; justify-content: center;">B</div> <div style="border: 1px solid black; width: 50px; height: 50px; display: flex; align-items: center; justify-content: center;">C</div> <div style="border: 1px solid black; width: 50px; height: 50px; display: flex; align-items: center; justify-content: center;">D</div> </div> <p><b>I observe</b> _____ .</p> <p><b>As a consequence I can say</b> _____</p> <p>_____</p> <div data-bbox="874 1720 1461 1809" style="background-color: #4a86e8; color: white; padding: 5px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">             _time 0 I observe: __         </div> <div style="text-align: center;">             _after mix minutes I observe ____         </div> <div style="text-align: center;">             after 3 minutes I observe         </div> <div style="text-align: center;">             I conclud         </div> </div> </div>

<ul style="list-style-type: none"> <li>• <i>use knowledge</i></li> </ul> <p><b>Communication</b></p> <ul style="list-style-type: none"> <li>• <i>vocabulary/ Communicative functions</i></li> </ul>	<p>CAN use knowledge</p> <p>CAN use vocabulary and communicative functions</p>	<p>NOW OBSERVE images A,B,C,D of the interactive didactic game  <a href="http://www.mheducation.ca/school/applets/bcscience7/mixtures/bcscience7_mixtures.swf">http://www.mheducation.ca/school/applets/bcscience7/mixtures/bcscience7_mixtures.swf</a></p> <p>Chose the best way to separate sugar + water .... A, B, C, or D?</p> <table border="1" data-bbox="868 591 1447 786"> <tr> <td data-bbox="868 591 1011 786"> <p>A</p>  <p>DESERT TENT APPARATUS</p> </td> <td data-bbox="1011 591 1155 786"> <p>B</p>  </td> <td data-bbox="1155 591 1299 786"> <p>C</p>  <p>Draining pasta</p> </td> <td data-bbox="1299 591 1447 786"> <p>D</p>  <p>FILTER IN FUNNEL</p> </td> </tr> </table> <p>a) I chose IMAGE _____                      b) I chose image ____ because/then this is a <u>solution/ heterogeneous mixture.</u>                      I use _____ to separate sugar and water</p> <p>[ correct answers A; A because / solution; evaporation ]</p> <p>Images from:  <a href="http://www.mheducation.ca/school/applets/bcscience7/mixtures/bcscience7_mixtures.swf">http://www.mheducation.ca/school/applets/bcscience7/mixtures/bcscience7_mixtures.swf</a></p>			<p>A</p>  <p>DESERT TENT APPARATUS</p>	<p>B</p> 	<p>C</p>  <p>Draining pasta</p>	<p>D</p>  <p>FILTER IN FUNNEL</p>
<p>A</p>  <p>DESERT TENT APPARATUS</p>	<p>B</p> 	<p>C</p>  <p>Draining pasta</p>	<p>D</p>  <p>FILTER IN FUNNEL</p>					
<p>Self assessment</p>	<p>I CAN</p>	<p>VERY WELL</p>	<p>WELL</p>	<p>NEEDS IMPROVEMENT</p>				
	<p>I can define a pure substance</p>							
	<p>I can define a mixture</p>							
	<p>I can identify features of homogeneous mixture</p>							
	<p>I can describe the basic conditions to prepare a mixture</p>							
	<p>I can work with my classmate</p>							
	<p>I can communicate in a scientific way</p>							

Author: Cristina Mariani

I can do the tasks with interest			
I can suggest how I can improve my work			

**SYNTHESISE the first lesson of the Module ( the lesson before the focus lesson of the lesson plan)**

Activity	Activity aims	Activity Procedure	Language	Interaction	Materials (please cite all sources)	Timing	Assessment
<p><b>Synthesis of lesson I</b></p>	<p><b>TOPIC:</b>  <b>Introduce pure substances and mixture</b></p> <p>The initial tasks will be calibrated to check for possible misunderstanding and to improve learner interest. Their answers are considered as a pre-text</p> <p><b>Reasoning:</b>                      Thinking about the importance of classification in</p>	<p><b>TASK:</b> What is a pure substance?                      “Pure” in science is the same as in daily language?</p> <p><b>TASK:</b></p> <ul style="list-style-type: none"> <li>• Who eats cereal and milk for breakfast? Who drinks milk? [mixture/ homogeneous mixture]</li> </ul> <p>Who has salad at lunch? [that’s a mixture too!]                      Observe Describe them! ( teacher gives pictures)</p> <p>Work in groups :                      Explore ways of grouping objects</p>	<p>List of vocabulary and using model structure (with scaffolding)</p> <p>Glossary</p>	<p>During the lesson:</p> <ul style="list-style-type: none"> <li>• Group interactions</li> <li>• Pair interactions</li> <li>• Classroom interactions guided by the teacher</li> <li>• Teacher to students</li> </ul>	<p>See resources and tools in the grid of Module</p>	<p>2 hour</p>	<p>The answers to the initial tasks and work pair activity check the possible misunderstandings (it is as a pre-text)</p>

	<p>science and why we need to classify in a easy context, for example the content of the school bag, to involve and to “activate” them to understand a theoretical context</p> <p>To create motivation and interest</p> <p><b>Identify and classify</b> pure substance and mixture</p>	<p>inside the school bag (use Venn diagrams)</p> <p>Work in pairs : Explore examples and ways of grouping mixtures: write a T chart : example of pure substances and mixture you discover in your daily life</p> <p><b>Classroom Comparing of the result of pair work guided by the teacher</b></p>	<p><b>Final activity in L2/L1</b></p>				<p><b>Final activity in pair is used as assessment of the lesson</b></p>
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## LESSON PLAN

<b>Activity</b>	<b>Activity aims</b>	<b>Activity Procedure</b>	<b>Language</b>	<b>Interaction</b>	<b>Materials (please cite all sources)</b>	<b>Timing</b>	<b>Assessment</b>
<b>1</b>	Motivation and interest	Focus on the learning objectives of this lesson	reading	Teacher to student	Mindomo map	3	

2	<p>Warming up and checking the possible misunderstandings and to improve their interest.</p> <p>Identify and classify mixtures</p> <p>Defining the concept of mixture from an operative/ constructivist point of view</p>	<p>DAILY TASK: WHEN CAN I SAY “THIS IS A MIXTURE?” according to the previous lesson and homework (brain storming and pair work table classification</p>	<p>Competencies developed</p> <p>I can say ... because I can't say (with language scaffolding) gap filling activity in pairs)</p> <p>Activation of key words</p>	<ul style="list-style-type: none"> <li>○ Pair work</li> <li>○ Whole classroom interactions guided by the teacher</li> <li>○</li> </ul>	PWP	<p>5 to revise homework</p> <p>7 min pair work</p> <p>15 min whole classroom interactions guided by the teacher</p>	<p>Homework and pair work is used as pre-assessment</p> <p>mixture ; homogeneous and heterogeneous mixtures</p>
3	<p>Introducing the scaffolding vocabulary Glossary structures</p>	<p>Teacher reads the structure Make examples for each structure</p>	<p>Vocabulary and Glossary and communicative functions</p>	<ul style="list-style-type: none"> <li>○ Teacher to students</li> </ul>		10 min	
4	<p>Identifying and classifying</p>	<p>Use the previous list to classify the mixtures into homogeneous and heterogeneous ones.</p>		<ul style="list-style-type: none"> <li>○ Pair work</li> </ul>		5	<p>To check the application of vocabulary and knowledge</p>

5	To create knowledge: ways to separate is useful to know and classify mixtures	Revise and compare pair work to give a correct classroom list		Whole classroom interactions guided by the teacher to find classroom definitions		10	
4	Definitions of homogeneous and heterogeneous mixtures			<ul style="list-style-type: none"> <li>○ Teacher to students</li> </ul>		10	
6	<p>To improve motivation and to assess if they have reached the main aim of the previous lesson: to identify pure substances and mixture in daily contexts</p> <p>Introducing new content about separation techniques in non formal teaching</p>	Interactive didactic Game	<p>Competencies developed</p> <p>Compare This is ... because.... This isn't because...</p>	<ul style="list-style-type: none"> <li>○ Pair work</li> <li>○ Whole class</li> </ul>	<a href="http://www.mheducation.ca/school/applets/bcscience7/mixtures/bcscience7_mixtures.swf">http://www.mheducation.ca/school/applets/bcscience7/mixtures/bcscience7_mixtures.swf</a>	20 minutes	

6	Motivating for the next lecture *** Reasons for this homework are explained in details into the grid at point HOMEWORK	Home work		○ Whole class		5	
7	Formal assessment			○ individual		30 minutes	
<b>NOTE for the teacher</b>	Observing the learning process to select the students for the in-depth analysis project work group (***) see the activity described in the grid at point recovering and powering)						