



## **Examples of Work**

Diogjena

## **Properites and changes of materials - Year 5**







PLAN Planning for assessment	Year	5	Торіс	Properties and changes of materials		
	Focus of assessment (National Curriculum statements)					
	Compare and group materials together, according to whether they are solids, liquids or gases. (Y4)					
	Description of activity					
	The children were given some raisins to handle and then shown a bottle of lemonade and asked to think what might happen when the raisins are added to the lemonade.					

	EVIDENCE OF LEARNING	ASSESSMENT
Oral evidence	Examples of work	Knowledge
	I predict that the raising will be suspended I predict this because I broom know that the raising work in plast and they won't send down so they suspend into the middle.	Diogjena does not include the key terms 'solid', 'liquid' or 'gas' learnt in Year 4.
Teacher observations		Working scientifically
The writing shows a good understanding of the word 'suspended'.	Raising Raising	

PLAN Planning for assessment	Year	5	Торіс	Properties and changes of materials	
	Focus of assessment (National Curriculum statements)				
	Compare and group materials together, according to whether they are solids, liquids or gases. (Y4)				
	Description of activity				
	The children made close observations of adding the raisins to the lemonade.				

	EVIDENCE OF LEARNING	ASSESSMENT
Oral evidence	Examples of work	Knowledge
	I observed that when the reserve where dropped into the water they sack to the bottom but then bubbles atached to the resin and it started to gloat best after a gew minutes it seak to the bottom.	Diogjena now includes the word 'gas' in her writing.
Teacher observations		Working scientifically
	20000 gas 0000 gas 0000 yessin 0000 versin 0000 versin 0000 versin 0000 versin 0000 versin 0000 versin	Diogjena makes a close observation and notices the effect the bubbles have on whether the raisins float or sink.

	Year	5	Торіс	Properties and changes of materials		
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h	Focus of assessment (National Curriculum statements)					
PLAN Planning for assessment	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.					
	Description of activity					
	In groups, the children were given could be sorted. The children wer	a selection of materials to handle e then shown a range of ways tha	. They talked about them and thou t they could present their sorting.	ght about different ways that they		



	Year	5	Торіс	Properties and changes of materials		
(Jana						
h	Focus of assessment (National Curriculum statements)					
PLAN Planning for assessment	<ul> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</li> <li>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> </ul>					
	Description of activity					
	The children were given the key v new words. Starting with the word	vords for the topic on cards. They Is they felt most familiar with, they	sorted these with their partner into were asked to write definitions for	words they had heard before and each word.		

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
	304id - A Solid is bods of particles tightly packed together. liquid - A liquid can make the shape of a contaner. gas-Goo There are many different types of gasses and some are good for you and some are toxic. Dissource-difference is the when you get sagar ad	The definition of 'freezing' is the only one that is clear and concise.
Teacher observations	water together and the sagar dissolves.	Working scientifically
Diogjena was familiar with a number of the words but was unable to write clear definitions.	Milling = 12 you melt a solid it will most probably milting = 12 you melt a solid it will most probably milt. burning = 12 you burg a natural most get smaller;	
'Evaporation' and 'condensation'	Breezing - Freezing a liquid will make it a satisf.	
are words that Diogjena should be	eveparation -	
could not recall what these meant.	condensation-	
This was an issue with the	Stynal conductor-	
majority of the class, so additional	represible -	
reinforce learning about	inoversible -	
evaporation as this is necessary	Solule-	
for the Year 5 statement about separating materials.	zdrot-	

Q	Year	5	Торіс	Properties and changes of materials	
(Jane					
Z	Focus of assessment (National Curriculum statements)				
PLAN	• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.				
Planning for assessment	Description of activity				
	The children were asked to add so that the children understood that t sugar and water had now become	ome sugar to water and observe it he sugar had not disappeared, bu a solution.	closely. During the discussion that that had dissolved and was still in the	t followed, the teacher ensured cup. She also explained that the	

	EVIDENCE OF LEARNING	ASSESSMENT
Oral evidence	Examples of work	Knowledge
Teacher observations	A When I added the caster sugar into the water the sugar parted and sank to the bottom but when I stund it the & small solids disolved a into the liquids the liquid.	Here Diogjena shows an awareness that a solid can dissolve in a liquid by breaking down into smaller pieces. She has used the word 'solution' when labelling her diagram. This is not sufficient evidence to show that she is secure with the concept of dissolving yet.
Teacher observations	the second se	working scientifically
When asked what she meant by 'the sugar parted', she said it broke up into littler bits.	water and sugar sub- solution	

PLAN	Year	5	Topic	Properties and changes of materials		
	Focus of assessment (National Curriculum statements)					
	• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.					
Planning for assessment	Description of activity					
	The children were asked to discuss in small groups and write down what they could change that might affect the speed of sugar dissolving. Using these ideas and the fair test planning board, each group chose their own investigation.					

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
"I don't think the type of container will make much difference, or the temperature of the room very much."	• The temperature of the liquid. • & Type of container • A mount of lightid	
Teacher observations	Agree and a adid	Working scientifically
Diogjena's group chose to investigate how the temperature of the liquid affected the time it takes to dissolve.	· Type & lialled · Temperature of 100m+	Diogjena is able to identify independent variables and also comment on the significance of them.

PLAN Planning for assessment	Year	5	Торіс	Properties and changes of materials	
	Focus of assessment (National Curriculum statements)				
	Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.				
	Description of activity				
	Each group was then given time to complete their chosen investigation and asked to interpret their results.				

	EVIDENCE OF LEARNING	ASSESSMENT
Oral evidence	Examples of work	Knowledge
	Tenprilum observations observations title dissolved glickly. 20°C 52°C It dissolved glicker than belor. It didn't really dissolve property 10°C	This piece of writing shows that Diogjena is confidently using the key vocabulary 'dissolve'. She has not, however, linked her observations to her subject knowledge to explain why the hotter water caused the sugar to dissolve more quickly.
Teacher observations	We sound out that the notion the water the	Working scientifically
	I know this because wet when we did the cold water wich was 10°c it didn't really dissolve but when ) put the not worker water wich was 52°c it dissolved at quicker.	Diogjena carries out the investigation controlling variables appropriately. She draws her own table to record her results and interprets these, including using the results to make further predictions.
	æren guicken und it we had even coder water it would diese disselved dieselve even slower.	

PLAN	Year	5	Торіс	Properties and changes of materials	
	Focus of assessment (National Curriculum statements)				
	• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.				
Planning for assessment	Description of activity				
	The children were given granulated sugar, caster sugar and a sugar cube to look at closely and then explore whether they would take the same amount of time to dissolve. They were also asked to explore the difference that stirring makes.				

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
	The sugar with the smallest solids disedue the quickest because it took less time to a break the solids apart because they are small when you stir it there is a digerence. The sum helps break doo down the solid therefore it	This shows a good understanding of the process of dissolving by linking observations made clearly to the process of the particles being broken down. Diogjena understands that smaller particles will be more quickly broken down so they will dissolve more quickly and that stirring will also break them down more quickly speeding up the dissolving process.
Teacher observations	dissolves quicker.	Working scientifically
Diogjena refers to the particle size as big or small solids.		

(mm	Year	5	Торіс	Properties and changes of materials	
h	Focus of assessment (National Curriculum statements)				
PLAN Planning for assessment	<ul> <li>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> <li>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> </ul>				
Description of activity					
	The children were shown how to f that it did not go over the sides of happened when they filtered this.	placing it in the funnel and careful sked to make a mixture of water ar	lly pouring water through it so nd sand and to see what		

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
	Sand and water are not dissolved the He sand and water are not dissolved the this because all the social is at is separated the the liquid mich didn't change colour. The sand stayed as the filter paper and the water water water the bottom of the aug. A tiny p bit of send with whent to the water	Diogjena recognises that the sand has not dissolved and is able to explain how she knows this.
Teacher observations		Working scientifically
	sulter send sulter cup	She successfully filters the mixture to separate the sand from the water.

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	Description of activity						
	The children then repeated this pl	rocess with a water and sugar mix	ture that they prepared.				

Oral evidence	Examples of work	Knowledge	
Teacher observations Diogjena is using the words 'dissolve' and 'solution' accurately consistently.	Sugar and water Sultion Sugar and water discolves. The sugar and water solution whent down much quicker because the water and sugar where in a solution and whent down much quicker because last time the solid was blocking the liquids way to the cap.	Although in the initial assessment activity Diogjena showed no recall of evaporation, unprompted she has used this knowledge here. Working scientifically	
	the descalved source is to exaporate theps.		

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	Description of activity					
	ation. They were asked to make a					

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
	predict that that the water in the plate will	This shows that Diogjena has the required knowledge about evaporation from Year 4 and is able to apply this to separating mixtures.
Teacher observations	Jacobe to it quicked this because the	Working scientifically
Diogjena's group chose to put the same amount of the solution into different types of containers left in the same place.	cup will evaporate the water and salt in the it has a snaller have and H	Diogjena sets up a comparative test, appropriately controlling variables (the amount of the solution, the place the containers were left).
When asked if the salt would evaporate, Diogjena showed a good understanding that the water not the salt would evaporate, "The salt will be left in the plate or bowl."	the air cant got to it	

One	Year	5	Торіс	Properties and changes of materials		
h	Focus of assessment (National Curriculum statements)					
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Description of activity						
	of equipment to use. They were					

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
Teacher observations Diogjena does not make it clear in her plan when she will add the water, but she added it after sieving the chickpeas.	First I will use the jork to pick the pesta shells. This is because it's easier to so and its the biggest thing their is . Next I will use the Magnet to pick up the paper clips. I will do this because paper clips are magnetic. After that I will use the siene to pick the ches chied chuckpess chickpeass open't small for them to set the siene for the siene. I will use the guardle and filter paper for the red lentils. I am going to use this because the red lentils are small firsty I will let the todor water and solt solt solution a evenporte and only the track will be left.	Diogjena uses her knowledge to successfully separate the given mixture and explains her method using all the expected vocabulary correctly. Working scientifically

Planning for assessment	Year	5	Торіс	Properties and changes of materials			
		Focus of assessment (National Curriculum statements)					
	<ul> <li>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</li> </ul>						
	Description of activity						
The children were given a range of materials to explore whether they could be used, ins sugar solution. They were given just a sugar solution to use.				aper, to separate sand from a			

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
"The sponge will not work as the solution will be absorbed by it."		Diogjena considers both absorbency and waterproofness when using her results to consider which materials could be used instead of filter paper.
Teacher observations	The joil did not let the water go through as it was waterproof which means that the water will not so through	Working scientifically
Diogjena's group tested the	Diogjena reread the first sentence below and explained that she meant the cloth	
materials by placing them over a	did not hold on to the water.	
beaker, squirting on the solution	The cloth did not absorb the mater and it will	
using a syringe, and observing the solution going into the beaker.	on to it. It wasn't waterproof and the water well,	
Diogjena realised that, to be useful for filtering, it was also important that the sand would not go through the holes.	the soulutions (sugar and water) but we checked to check with sand to make sure it doesn't go therefor	

Gra	Year	5	Торіс	Properties and changes of materials					
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	<ul> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</li> </ul>								
Description of activity									
	The children were asked to set up	an investigation to explore how w	vell different types of cups would ke	eep a drink warm.					

EVIDENCE OF LEARNING							ASSESSMENT		
Oral evidence		Examples of work					Knowledge		
"The water in the plastic cup and the ceramic cup was at 29°C, but it cooled more in the ceramic cup showing this is not such a good	moterial of Clup	Oriantes	2 minutes	4 minutes	6 minutes	8 minutes	10 Min	2 1/2	Diogjena uses the words 'thermal insulator' correctly when interpreting her results.
thermal insulator. The water in the plastic cup and the polystyrene cup was at a different temperature to start with and the temperature change was quite similar, so it is	Polyst- iven	310	310	310	300	290	280	2,80	
difficult to compare how good they are as thermal insulators." Teacher observations	plostic	290	290	280	260	25.90	250	250	Working scientifically
Diogjena's group decided to record the temperature in each cup every two minutes.	Cenaria	290	290	24.8	240	234	23.60	23.2	Diogjena records her results in a table.

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	Description of activity						
	The children were given some ob were chosen.	ects to explore and identify the m	aterials they were made from and o	consider why these materials			

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
Teacher observations	Alurians a usp	This shows a good understanding of thermal conduction and insulation.
Diogjena considered the following properties – heat conduction, weight and transparency (although this word is not used here).	The sourcepon is made out & durning because it conducts rest. This means that the fast will travel andured the sourcepan and cost the good. It recons that you can easily pick it up because its light. The the fondat The handel is their so you don't burn your hard and it is made out south weber. The lid is puck out & glass so you can see your your food cashing.	

	Year	5	Торіс	Properties and changes of materials			
(Jana							
h	Focus of assessment (National Curriculum statements)						
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	Description of activity						
	Continued from the previous page.						

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
Teacher observations	plestic The head of the cable is made out of plastic because plastic doesn't conduct heat. Also the pre bit that got's plastic doesn't conduct heat. Also the pre bit that got's plastic plastic conducts electricaty. The plastic correring the wires in their persons	This shows a good understanding of electrical conduction and insulation.
Electrical conductivity is considered here.	y it had notal you would get electracuted to yoursall and plastic does not conduct electricate.	

0	Year	5	Торіс	Properties and changes of materials		
(Jana						
h		Focus of assessment (National Curriculum statements)				
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	Description of activity					
	Continued from the previous page	·.				



0	Year 5 Topic Properties a ma							
(Jana								
h	Focus of assessment (National Curriculum statements)							
PLAN Planning for assessment	<ul> <li>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</li> </ul>							
	Description of activity							
	The children were given labelled images and asked to design a classification key to separate them.							



	Year	5	Торіс	Properties and changes of materials			
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h							
PLAN Planning for assessment	<ul> <li>Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</li> </ul>						
	Description of activity						
	The terms 'reversible change' and 'irreversible change' were displayed on the board and the children were asked to discuss we thought these might mean and to think of some examples of reversible and irreversible changes.						

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
Teacher observations Diogjena identifies changes of state as reversible changes and cooking and burning as irreversible changes. However, at present, she includes making a salt solution as an irreversible change.	Neversible danges trouble was asked ice mate water water deere ice Egg stat cooked egg sattendide solt salt and water substitute ice aream mate melted wood 3 perfor paper ice aream to method wood 3 perfor paper ice aream to method wood 3 perfor paper ice aream to melted wood 3 perfor paper ice aream to be area a size of paper it tures into oslas and you call change to a it has tured a different colour and it is seen it has tured a different colour and it is seen it has tured a different colour and it is seen	Diogjena's current understanding is based on it not being possible to get the original materials back, rather than the creation of new materials. This needs clarification. Working scientifically

	Year	5	Topic	Properties and changes of materials			
(Jana							
h	Focus of assessment (National Curriculum statements)						
PLAN Planning for assessment	<ul> <li>Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</li> </ul>						
	Description of activity						
The children observed a fizzy tablet in water to notice the gas being produced. The teacher stressed that this was a new r was produced during the chemical reaction. The teacher then demonstrated using a fizzy tablet to explode a film canister, children then generated their own questions and thought about how they might answer them.							

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
Teacher observations	LO to to ask scientific questions 13.12.16 question to the low to find out 2 Arguer: Alka seltra internet Alka seltra Alka seltra is made of male of ask what gas Internet on askydious what lappend Try at in cleft aixide is you safe class?	Working scientifically
	vhat will happen if you Thy it in dess turn it upside down? 12 you put it with arstra Try it in class liquid what will happen? It is and little	Diogjena asks some relevant questions which could be answered through practical work in class and which she could research using the internet, which she did.

	Year	5	Торіс	Properties and changes of materials
(Jana)				
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	Description of activity			
	The children shared their questions with a partner and chose one question of their own and one from their partner to talk about in more detail.			

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
"When the water is hotter, the gas is produced more quickly so the pot explodes quicker."	1. what would happen if I changed changed the temperature of the water?	
	I predict that it will explode allicker is I put change the tempriture of the water. M Wink to this because the lot water has mor energy	
Teacher observations	so it will explode quicker. I know that the it will explode quicker as it will have more energy in the hot water.	Working scientifically
	2. What happens if I turn it upside down? I predict that it will gly like a pocket but a bit lower as it will be peavier. I this this because it has more weeks weight of the caristor. I know this because its the carister is gotte going to gly with it but it will be hearing a as it will have something in it.	Diogjena uses her scientific knowledge to justify her predictions, to which she was able to add further detail when asked by the teacher.

	Year	5	Торіс	Properties and changes of materials	
(Jana					
PLAN Planning for assessment	Focus of assessment (National Curriculum statements)				
	<ul> <li>Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</li> </ul>				
	Description of activity				
	The children were asked to present their understanding about reversible and irreversible changes.				

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
Teacher: "In which of these changes is a new material produced?"	Reversible and I menersible the	Diogjena gives an example of both a reversible change (melting and freezing) and an irreversible change (burning). She understands that in
Diogjena: "Well, ice and water are both the same material, but one is solid water and the other is liquid water. When the paper burns, it turns into ash. Ash is the new material. Also, when the Alka Seltzer tablet was put in the water, new carbon dioxide was produced."	Reversible A venersible Hange is Uike when you nell an ice cabe	an irreversible change, a new material is produced.
Teacher observations The oral comment shows that Diogjena understands about a new material being produced.	sou can change it back to a solid by freezing to an object and you can't change it back to what freezing to an object and it back to what for Example: to the to an object and it back to what for Example: to the to an object and it back to what for Example: to the to an object and it back to what for Example: to an object and it back to what for Example: to an object and it back to what to an object and it back to what to an object and it back to what it was originally to the to an object and it back to what it was originally to an object and it was originally it was originally it in the it is an object and it was originally it is a object and it is a originally it is a originally it is a object and it is a object a	Working scientifically

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PLAN Planning for assessment	<ul> <li>Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, include changes associated with burning and the action of acid on bicarbonate of soda.</li> <li>Description of activity</li> <li>Not many children had included dissolving in their posters as a reversible change, so the teacher set up a talk activity to clarify this They were shown three images and asked to discuss which is the odd one out.</li> </ul>			

	ASSESSMENT	
Oral evidence	Examples of work	Knowledge
Diogjena: "The fizzy tablet is the odd one out, as a new material has been produced, so it is an irreversible change."		Diogjena demonstrates clearly that she is secure about reversible and irreversible changes.
in water is reversible?"		
Diogjena: "Yes, because you still have sugar and water, and you can get the sugar back by evaporating the water."		
Teacher observations		Working scientifically



Diogjena names a wide range of materials, including solids, liquids and gases. She talks about their properties, based on observable features and properties she has tested. She explains why a material is suitable for a purpose, based on a range of properties. She understands that some solids dissolve in water to form a solution. She has carried out investigations into the rate of dissolving and can relate her results to her understanding. She separates mixtures using a range of techniques. She explains which changes are reversible and which are not reversible, based on the production of a new material.