Reversible and Irreversible Change

There are three activities here. One is a sorting activity where examples of reversible change are sorted into three categories on an overlapping Venn diagram. The other is where two texts written in two styles are chopped up for sequencing and sorting. These were produced by Francis Fey and Dominique More from May Park School in Bristol. The third activity, a connect four game, was produced by Year 6 teachers at Walaud School in Luton.

Please send us any more activities you have developed on this topic and/or any further examples to add to the card activity.

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The webaddress is <http://www.collaborativelearning.org/reversiblechange.pdf>

COLLABORATIVE LEARNING PROJECT
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Supporting a cooperative network of teaching professionals throughout the European Union to develop and disseminate accessible teaching materials in all subject areas and for all ages.

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BRIEF SUMMARY OF BASIC PRINCIPLES BEHIND OUR TEACHING ACTIVITIES:
The project is a teacher network, and a non-profit making educational trust. Our main aim is to develop and disseminate classroom tested examples of effective group strategies across all phases and subjects. We hope they will inspire you to use similar strategies in other topics and curriculum areas. We run teacher workshops, swapshops and conferences throughout the European Union. The project publishes a catalogue of activities plus lists in selected subject areas, and a newsletter available by post or internet: “PAPERCLIP’.

*These activities were influenced by current thinking about the role of language in learning. They are designed to help children learn through talk and active learning in small groups. They work best in mixed classes where children in need of language or learning support are integrated. They are well suited for the development of speaking and listening . They provide teachers opportunities for assessment of speaking and listening and other formative assessment.

*They support differentiation by placing a high value on what children can offer to each other on a particular topic, and also give children the chance to respect each other’s views and formulate shared opinions which they can disseminate to peers. By helping them to take ideas and abstract concepts, discuss, paraphrase and move them about physically, they help to develop thinking skills.

*They give children the opportunity to participate in their own words and language in their own time without pressure. Many activities can be tried out in mother tongue and afterwards in English. A growing number of activities are available in more than one language, not translated, but mixed, so that you may need more than one language to complete the activity.

*They encourage study skills in context, and should therefore be used with a range of appropriate information books which are preferably within reach in the classroom.

*They are generally adaptable over a wide age range because children can bring their own knowledge to an activity and refer to books at an appropriate level. The activities work like catalysts.

*All project activities were planned and developed by teachers working together, and the main reason they are disseminated is to encourage teachers to work effectively with each other inside and outside the classroom. They have made it possible for mainstream and language and learning support teachers to share an equal role in curriculum delivery. They should be adapted to local conditions. In order to help us keep pace with curriculum changes, please send any new or revised activities back to the project, so that we can add them to our lists of materials.

Reversible change

These labels are for sticking onto a Venn diagram for sorting the cards.

Evaporation is taking place: a liquid is turning into a gas.

Condensation is taking place: a gas is turning into a liquid.

Both evaporation and condensation are taking place.

Henna dries on your hand.	If you spill a little petrol on the ground at the petrol station, it rapidly disappears.
Paint dries on walls after a few hours.	When you spray perfume on your body, it feels cold.
When you breathe on the inside of the window when it is cold outside, a mist appears.	Sometimes it rains for a short time in the morning, but by the afternoon the puddles have disappeared.
On a rainy day the car windscreen mists up.	When you boil potatoes in the kitchen, water droplets run down the windows or walls.
Clothes dry on a line even when the sun isn't shining.	A tiled surface near a kettle gets wet.
Clouds form on a hot day over the sea.	Water keeps flowing into the Dead Sea, but the level is slowly dropping.

Evaporation/condensation example cards. Print on card and cut up.

A hair dryer dries your hair.	Sometimes grass is wet in the morning even if it has not been raining during the night.
Nail varnish hardens on your nails.	In a sauna the hot stones turn the water into steam.
If you leave a slice of bread on the table it dries out.	When you run a bath the mirror gets misty.
Very hot or very cold weather makes your lips dry.	You can see your breath in cold weather.
The class are playing five-a-side football in the hall and mist appears on the windows.	Vegetables lie on a rack in the steamer. Steam rises around them and water forms on the inside of the lid and drops back down.
Larder fridges catch water in a gutter at the back. Water flows out of the fridge, is heated and disappears.	In the Persian Gulf seawater is turned into fresh water in desalination plants.

Evaporation/condensation example cards. Print on card and cut up.

Let me tell you what we did yesterday. Mr Fey asked us to stay near the table near the front of the classroom, but not to get too close.

There was a kettle on the table. He went and filled it with water and then switched it on. Was he going to make us a cup of tea?

As the water was heating up, we began to notice steam rising out of the spout of the kettle. The kettle got noisy and more steam came out.

Our teacher then picked up a metal tray with an oven glove. We thought this was a bit odd since it did not seem to be hot.

He then held the tray at a slight angle over the steaming kettle which explained why he had used the oven glove.

Because of the angle we could still see the bottom of the tray. Small drops of water began to form on the bottom.

It looked at first like mist, but then the drops began to grow bigger and run down and off the tray onto Mr Fey's feet. It was lucky he did not have bare feet.

Mr Fey then asked us what we thought was happening. We went back to our desks and I wrote something down. I am not going to tell you what it was. You have to guess

This is designed so that you can chop each section up for reassembling in sequence.

Take 200 mls of water and mgs of salt. Gradually add the salt to the liquid until it has completely dissolved.

Take four saucers and put about 60 mls of this saturated solution in each one. Place one saucer on a sunny window sill, one near the heater or radiator and one on a shelf away from the sunlight.

Cover the fourth saucer with a plate and place it anywhere in the room.

After a week observe and compare the saucers. Ask yourself these questions and try to find answers.

In which saucer has the water evaporated completely?
In which saucer is the most liquid remaining?

In the saucers where the liquid is gone, what kind of solid is left behind?
What does the solid look like? Is it different from the salt you mixed into the water?

Some conclusions:
The liquid in the saucer on the heater evaporated completely and the salt remained stuck to the saucer.

The solution in the saucer furthest from the heat evaporated least. Very little liquid disappeared from the covered saucer.

This is designed so that you can chop each section up for reassembling in sequence. You can mix the pieces with the next page which is also chopped up.

Reversible and Irreversible Change

When butter is warmed it melts.	When vinegar and bicarbonate of soda are mixed they produce a gas.	When a woollen jumper is washed at a high temperature it shrinks.
When sugar is put into water it dissolves.	When clay is heated it goes hard.	When water is cooled it turns to ice.
When water is warmed it evaporates.	When plaster is mixed with water it goes hard.	When biscuit mix is heated it goes hard.
When water is heated strongly it boils.	When bread is baked the outside goes crispy.	When choco-late is frozen it goes hard.
When water vapour is cooled it condenses.	When candle wax is heated it melts.	When a match is struck it burns.

This is the left hand side of the board. Cut this piece off and stick over the other half of the game board.

Connect Four Game

When peas are frozen they go hard.	When whisked egg is heated it scrambles.	When bicarbo-nate is added to water it fizzes.
When an ice cream is left in the sun it melts.	When the sun shines on a puddle it melts.	When a candle is lit the wax burns.
When custard powder is mixed with water it thickens.	When coal is burned it turns to ashes.	When iron is exposed to water it goes rusty.
When cement is mixed with water it goes hard.	When bath salts are added to water they dissolve.	When jelly cubes are heated they melt.
When wood is left in water it rots.	When chicken is heated it cooks.	When petrol is burned it powers a car.

This is the right hand side of the game board. Stick the other half over this and preferably mount on card or laminate.=

These are the cards for the reversible and irreversible change connect four game which you will need to print in two colours and cut up.

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Reversible Change	Reversible Change	Reversible Change	Reversible Change
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Reversible Change	Reversible Change	Reversible Change	Reversible Change
Reversible Change	Reversible Change	Irreversible Change	Irreversible Change
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