East Renfrewshire Council: Education Department
Practitioner Moderation Template

School Code	F
Practitioner Code	F10
Curriculum Area(s)	Science
Level	Second Level
Stage(s)	P5
Specific subject (if applicable)	Changing substances/ mixing and separating

Experiences and Outcomes

Science

By contributing to investigations into familiar changes in substances to produce other substances, I can describe how their characteristics have changed.

SCN 2-15a

Literacy

I can convey information, describe events, explain processes or combine ideas in different ways.

LIT 2-28a

Learning Intentions and Success Criteria

Science LI:

- I am learning to contribute to the planning of an investigation.
- I am learning to describe the changes that occur as the result of an experiment.

Science SC:

- I can complete an experiment plan.
- I can identify variables that may affect the experiment.
- I can carry out experiments safely and effectively.
- I can recognise and record changes that have occurred to the substances as a result of the experiment in oral and written formats.

Literacy LI:

- I am learning to convey information
- I am learning to explain processes in different ways.

Literacy

- I can use the terms soluble and insoluble accurately.
- I can accurately record changes that have occurred to the substances as a result of the experiment.
- I can create a poster, displaying the experiment process.
- I can deliver an oral presentation, explaining the experiment process and reporting my findings.

Lesson One

SC: I can complete an experiment plan.

I can use the terms soluble and insoluble accurately.

Begin lesson with teacher in role – playing sick, coughing and spluttering. Encourage children to provide ways of relieving symptoms – if not already mentioned guide children to medicine specifically Lemsip/soluble tablet as I dislike swallowing pills. Practical demonstration of soluble tablet. Discuss observations. Proceed to discuss importance and benefits of substance mixing in our world today – Chn to work in pairs to think of any more examples and record on sheet.

LI and SC to be developed with chn.

Introduce key terms soluble and insoluble. Children to try and come up with definition after watching TWIG video.

Children to plan experiment using planning tool. Purpose of experiment: to identify soluble and insoluble substances. Whole class review planning of experiment – chn to come up with variables that must remain the same throughout all experiments.

Evidence:

Examples of substance mixing in our world,Soluble and insoluble definitions,Experiment plan

Lesson Two - Substance Mixing

SC:I can contribute to the practical work by collecting suitable resources.

I can carry out experiments safely and effectively.

I can recognise and record changes that have occurred to the substances as a result of the experiment in oral and written format.

I can use context specific words to evaluate the experiment

I can accurately record changes that have occurred to the substances as a result of the experiment.

Carry out paired experiments ensuring all variables are kept the same. (Each table to host different substances for mixing). Allow time to record results in table. Talking tine available for recording observations.

- Salt, sugar, cornflour, chilli powder, turmeric, sand, icing sugar, oil, flour, coffee, alka-seltzer, protein powder, bath salts

A hand lens or digital microscope will be used to examine the contents of each beaker.

Evidence:

Chn to record results in investigation pack.

Picture of experiment and resources collected with pupils.

Evidence:

Record of experiment

Discussion of changes in substances – talking tin and transcript

Use of soluble/insoluble

Lesson Three – Evaluating Experiment

SC:I can recognise and record changes that have occurred to the substances as a result of the experiment in oral and written formats

I can create a poster, displaying the experiment process.

I can deliver an oral presentation, describing the experiment and reporting my findings.

Evidence:

Poster and Oral Presentation transcript

Lesson Four – Lava Lamp Creation

To conclude the series of lessons, children will design and make their own “lava lamp” using oil, water, food colouring and an Alka-Seltzer. I am hoping that the pupils will discuss the mixing and separating of substances.

Practitioner Moderation Template **Learner Evidence**

Record the range of assessment evidence that was gathered to meet the success criteria (Say, Write, Make, and Do) considering breadth, challenge and application.

Say:

- Make valid suggestions for the apparatus required to carry out the investigation.
- Predict the effect of changing one variable on the other and give a reason based on scientific knowledge and understanding.
- Contribute to the design of the investigation.
- Make observations orally – talking tin transcript
- Use the terms soluble and insoluble accurately.
- Oral presentation

Write:

- Contribute to the planning of the investigation.
- Record Observations on record sheet.
- Create poster displaying the experiment process.
- Use the terms soluble and insoluble accurately.

Do:

- Successfully participate in the practical work.
- Demonstrate skills of working in groups (adopting roles, taking responsibility, managing disagreements)

Did the learner successfully attain the outcomes? YES/NO

Briefly outline the oral/written feedback given to the pupil on progress and next steps, referring to the learning intention and success criteria.

- After observation, the child was very dominant within his partnership so he was orally asked to consider how he could work more effectively, allowing his partner to help in the planning of the experiment. This was an issue throughout the process and was something the learner identified himself as he was finding it difficult to be corrected. He is very interested in science and felt more confident than his partner, even though she displayed a better understanding at times.
- Child was orally urged to reflect on his poster after initial presentation as it did present variables and key words, however it didn't clearly identify the process. On revision he was able to present the experiment process also.
- The child delivered a very engaging oral presentation. He was assessed using the second level listening & talking presentation criteria. The next steps were relating to pace and it was agreed he needed to slow down in order to make his points clear. He also confused the terms soluble and solution and he self-corrected himself on numerous occasions.

Pupil Voice:

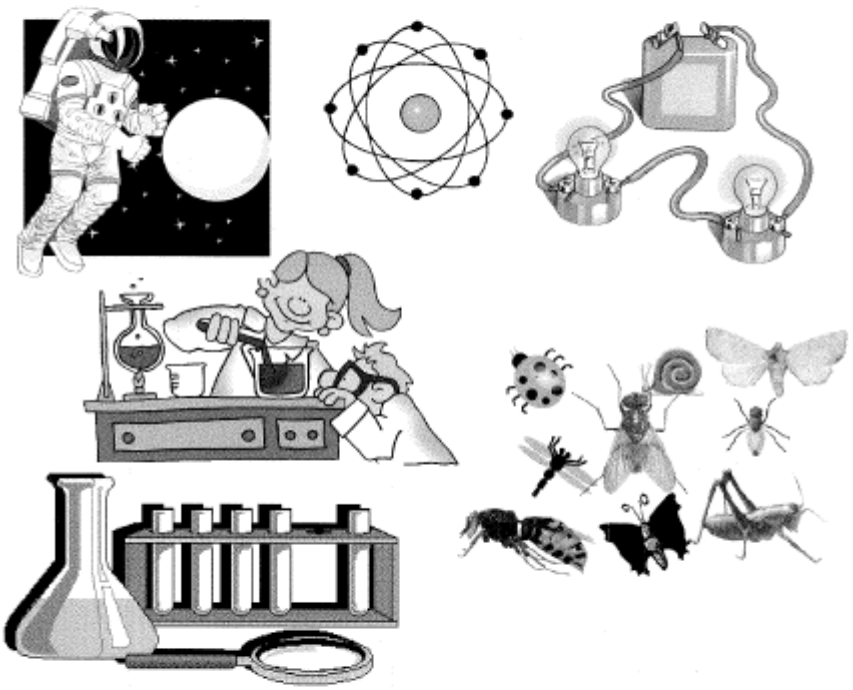
What have you learned? How did you learn? What skills have you developed?

"I loved planning with ….. (partner). She helped me a lot. I think I am a lot better (at planning and investigating) because …….. (teacher) let us do it alone. I know soluble and insoluble, dissolving and not dissolving. I can record my results and I made a poster and a talk.

Learner Evidence

Science Investigation

Investigation: To find out which substances are soluble + which are insoluble.

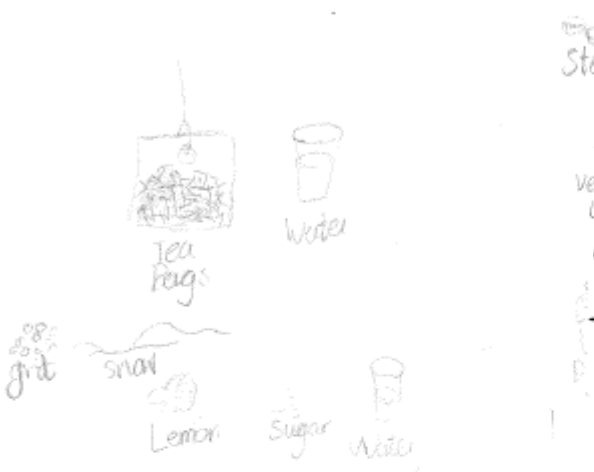


Lesson 1

SC: I can complete an experiment plan.

I can use the terms soluble and insoluble accurately

In our world we see these substances mixed together:



*Teacher voice:

-Child is making links to real life contexts.

- Child makes an attempt to define context specific words.

Soluble

My definition: 2 things that (mix) together. substances that can join.

Dictionary Definition: Able to be dissolved.

Insoluble

My definition: 2 things that don't (mix) together. substances that don't join.

Dictionary Definition: Impossible to dissolve

Lesson 1

SC: I can complete an experiment plan. *I can identify variables that may affect the experiment.
I can context use specific words to plan the experiment.

Aim: What do we want to find out? To find out the substances that are soluble and dissolve in water and which are insoluble and don't dissolve in water

What things will we will we need to keep the same for each experiment?

Size of jar
amount of water
amount of substance
mixing
time of mixing
type of mixing

* Teacher voice:
- Child knows the purpose of the experiment
- Child identifies suitable resources
- Child use context specific words. Soluble, dissolve insoluble, substance,
- Child can identify variables.

What we think will happen: I think it will be easy to estimate the soluble and insoluble substances. / know Sand will sink because it belongs at the bottom of the Sea.

Resources we need to carry out our investigation successfully:

Jars (even size)
water
substances
spoons
timer
talking tins
mixing spoons
pencils
work book

[Practitioner Moderation Template]

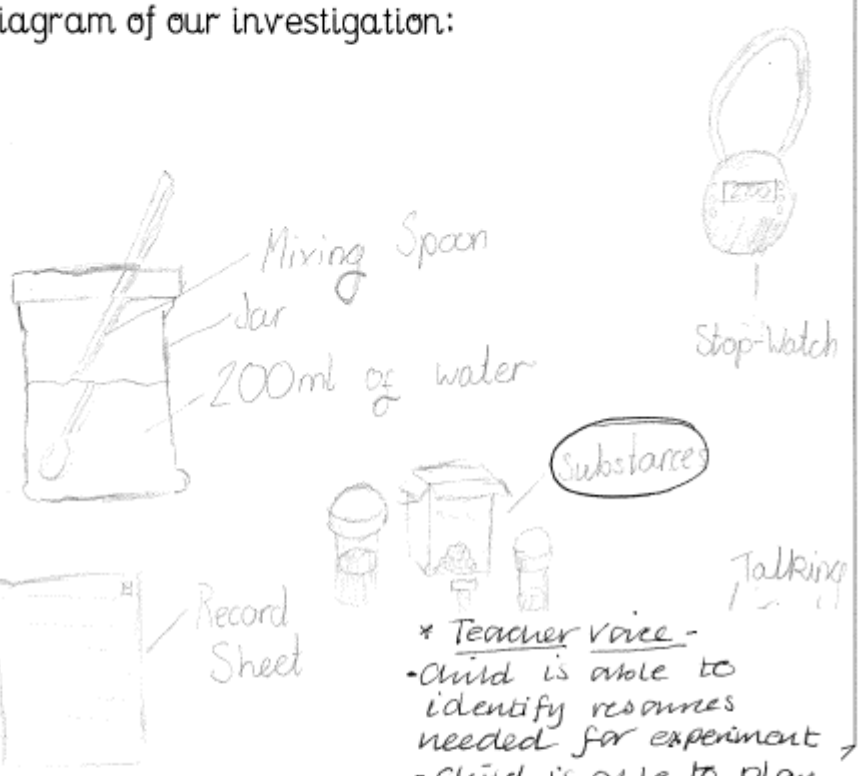
[Learner Evidence]

Lesson 1

SC: I can work with a partner to complete an experiment plan.

I can context use specific words to plan the experiment.

Labelled diagram of our investigation:



* Teacher Voice -
- Child is able to identify resources needed for experiment
- Child is able to plan steps that will be taken to carry out experiment successfully.
- Child uses context specific words 'Substance, soluble, insoluble'

Steps we will take to carry out our i

0 Get our resources - Lay them out n
2 Measure the water out into the ja
3 Set timer.
4 Measure out the 1st substance
5 Mix it in with five stirs
6 Start the timer.
7 Stop, look and record on the sheet and in the bin. Is it been dissolved or is it insoluble

Lesson 2/3

SC: I can recognise and record changes that have occurred to the substances as a result of the experiment in oral and written formats

I can use context specific words to evaluate the experiment

I can accurately record changes that have occurred to the substances as a result of the experiment

Record of Results:

Rock Salt - Insoluble - sank to bottom - dint dissolve

Sugar - dissolve

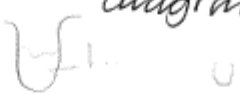
Cornflour - soluble

chilli powder - soluble

Turmeric

Sand - Sinking, Insoluble

icing sugar - Soluble - all dissolved - not dissolving



oil - Insoluble

Flour

coffee

alka-seltzer - fizzing, all gone, dissolved

protein powder - Soluble

bath salts - Soluble

* Teacher voice:

- child has recognised Physical changes in the substances.
- child has recorded results using context specific words.
- child has attempted to show results in diagrams.

Practitioner Moderation Template **Learner Evidence**

SC: I can recognise and record changes that have occurred to the substances as a result of the experiment in **oral** and written formats

Teachers instructions: "After taking time to carry out each experiment, I want you to record in the talking tin your findings. Make sure you have the talking tin with your group number on it. We agreed that you will give each substance 2 minutes to settle, so record your findings after the two minutes, there are stop watches at each station."

Talking Tin - Rock Salt

Child: "We are reporting from station 1 here in P5. Ok so we have carried out the mixing experiment with salt and water, we made sure the amount was even to make it all fair as can be. We are counting down the time now, I think it will mix but my R.S (partner) doesn't…..(counts down from 10) and we have a result here. It seems to be that the salt has sunk to the bottom of the jar and that mea l in the water."

Teacher Voice:
Child has a clear understanding of what the word insoluble means and uses it in context well. He is able to report that the salt has not mixed with the water but fails to use the word dissolve.

Talking Tin - Cornflour

Child: "Now onto station 3. We are now mixing cornflour into the water. I predict that it mixes as I think my mum did this at home once when we were making soup and so does RS (partner). OK we are now reporting on our findings and they are that the cornflour has mixed with the water which means it has dissolved in the water which means it disappears and you can't see it anymore. We stuck to the rules bles, the same.

Teacher Voice:
Child reports clearly on the findings, included predictions and uses the word dissolved accurately. Also refers back to "varieties", which was corrected to "variables".

Talking Tin - Sand

Child: "OK sand. This will def sink and not dissolve so I am predicting it's insoluble. OK here goes. Yes ! As we predicted the sand has sunk to the bottom and hasn't dissolved in the water, the particles must be heavier and bigger. So its insoluble."

Teacher Voice:
Child clearly understand the meaning of both the terms "soluble" and insoluble" and can clearly report his findings orally. He also begins to make links to previous knowledge and learning.

Lesson 3

SC: I can recognise and record changes that have occurred to the substances as a result of the experiment in oral and written formats

I can create a poster, displaying the experiment process.

I can deliver an oral presentation, describing the experiment and reporting my findings

Pupil Voice: I loved planning with [redacted]. She helped me a lot. I think I am a lot better because [redacted] let us do it on our own.

I know soluble + insoluble, dissolving + not dissolving.

I can record my results. made a poster + talk.

Peer Voice:

You are really good at working with others in science, your reading science book must help your poster was really helpful and bright I helped me remember some words

Teacher Voice: '[redacted] has been successful in attaining the outcomes.'

– Well done [redacted], you worked well with [redacted] to complete this investigation successfully. You contributed to the preparation and planning and carried out all experiments safely. You were a real help to me – especially reminding me where I had put the resources :) You worked hard to record all your results accurately. Through your talking in feedback and presentation, it is very clear you are confident in planning and carrying out experiments and are becoming more familiar with the scientific language used.

You did yourself proud ☆ +3

Practitioner Moderation Template **Learner Evidence**

Cluster moderation F10
SC: I can carry out experiment safely and effectively

Pupil Voice: "We were really successful at getting all our stuff for the experiment and carried it out really safely and well. Although I talked too much and was a bit bossy sometimes.

Teacher Voice: "The pupil did take charge but recognised this and tried his best to share out tasks fairly. Pupils were really successful and recorded and reported very effectively."

Pupil Voice: " Ok we are now reporting on our findings and they are that the cornflour has mixed with the water which means it has dissolved in the water which means it disappears and you can't see it anymore"

Teacher Voice: "The pupil can clearly report on findings, linking practical experiment to the theory and key words he has learned."

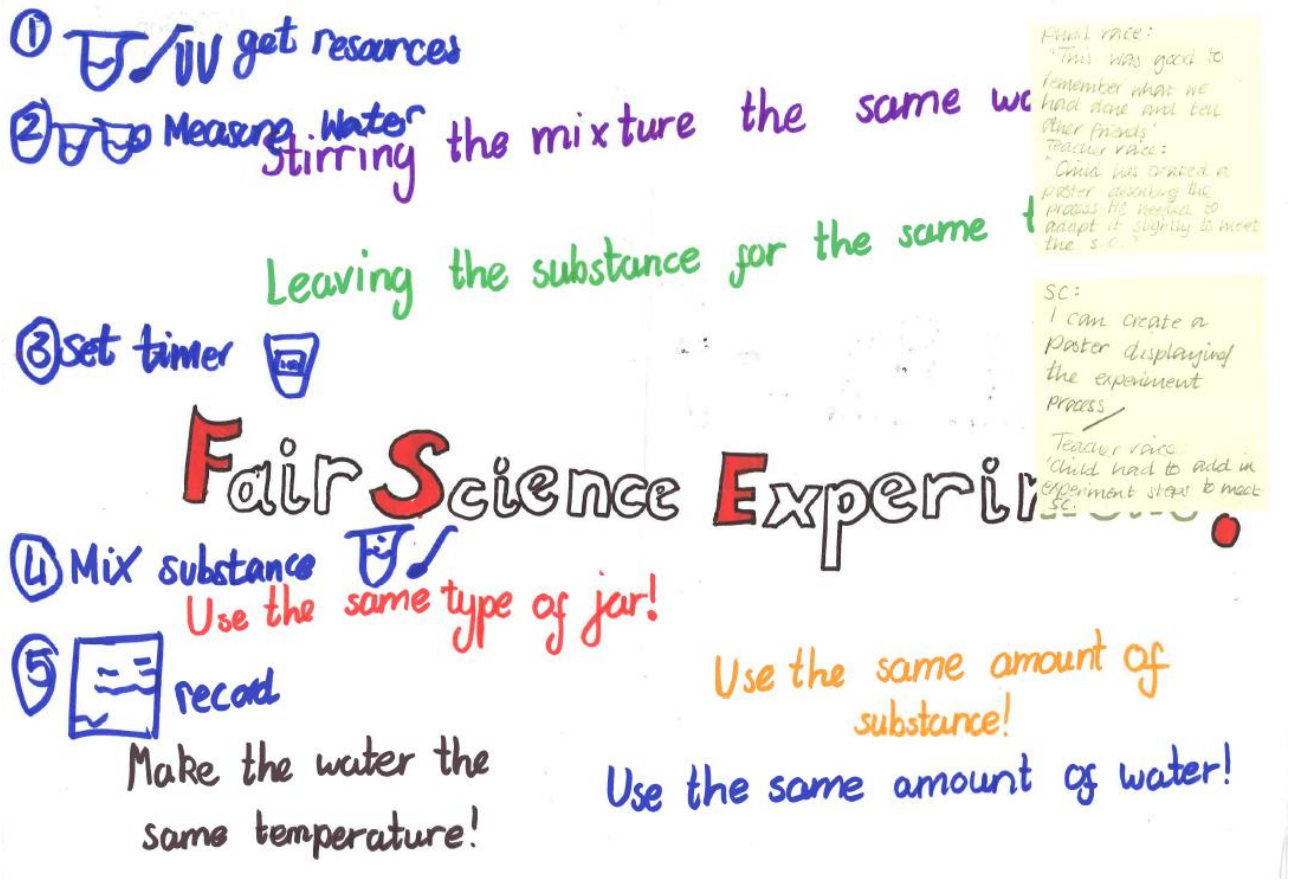
Lava lamp creation – Lesson 4

Pupils Voice " This was so much fun and we can take them home. It showed me how fun it is to carry out experiment and that oil and water don't mix and that an Alka-Seltzer can dissolve and fizz up and make bubbles in it. It's cool !"

Teacher Voice: "This was a brilliant end to the series of lessons. The child was keen to discuss what was happening with each substance and was keen to try and explain the process."

[Practitioner Moderation Template]

[Learner Evidence]



Oral presentation Transcript

SC: I can deliver an oral presentation, describing the experiment and reporting my findings.

Child - "Primary 5, as you know my name is Mr ... ." I would like to present to you mine and ... (partner) findings from the science investigation for mixing substances. Our aim was to find out which substances are soluble and which substances are insoluble. At the start I did know these words but I knew that the solutions ...emmm I mean substances, would probably sink or float but I had forgotten it was called dissolving.

Partner – We found a lot of interesting things and some that we hadn't predicted but first we want to tell you about working together to make this experiment work. Firstly we had to identify substances that we wanted to use for the experiment to find out if they were soluble in water or insoluble.

Child – The we got our equipment, we needed jars (which must be the same size to keep it all fair), mixing spoon, measuring spoon, stop watch, record sheet, pencils, rubbers, substances and talking tine and last of all water. We then measured out the water into each jar and set the timer, we poured in the first substance, mixed it round with 5 stirs and then started the timer. We then wrote down quickly what we seen then recorded it all into the talking tin. We enjoyed the talking tin more.

We did about 7 substances and found lots of interesting things like for example the rock salt didn't melt I mean dissolve but then after the night time and when we came into school the next day it was mostly gone.

Thanks for listening.

Teacher voice:
'Child delivered presentation with partner + was able to explain process + findings. He should slow his pace down in order to ensure points are clear for audience'.