Unit name: Kitchen Chemistry – Chemical Change
Lesson: Lesson 1 – Introduction to chemical change

Prior Knowledge:
How to view QR codes on iPad

Key Scientific Knowledge(KSK):

- Physical change is the change to the physical properties of a substance or material where the substance is still the same substance (Department of Education, Employment and Workplace Relations (DEEWR), 2009).
- Chemical change is when a new substance is formed through the interaction of two substances (Lott & Jensen, 2012).
- Some signs of a chemical change are bubbling, the substance got hot or cold, lights up or has a new smell (Lott & Jensen, 2012).
- Phase changes such as melting and boiling are changes in the molecules arrangement in a substance, it is not forming a new substance. Therefore these are physical changes (Lott & Jensen, 2012).

Science & Technology Outcomes & Indicators:

ST3-12MW – Material World - identifies the observable properties of solids, liquids and gases, and that changes made to materials are reversible or irreversible

-observe and compare the differences in the properties and behaviour of solids and liquids, eg shape and ability to flow

- make and test predictions about the effect of temperature on the state of some substances, eg adding and removing heat from water

-observe some irreversible changes that common materials undergo to identify that the changes may result in new materials or products, eg rusting iron, burning paper, cooking a cake and making toffee

-classify some observable changes that materials undergo as reversible or irreversible

ST3-4WS –Working Scientifically -investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations

-drawing conclusions and providing explanations based on data and information gathered first-hand or from secondary sources

-comparing gathered data with predictions, and using as evidence in developing explanations of events and phenomena

Other Key Learning Area's

English

EN3-3A - uses an integrated range of skills, strategies and knowledge to read, view and comprehend a wide range of texts in different media and technologies

-use comprehension strategies to interpret and analyse information and ideas, comparing content from a variety of textual sources including media and digital texts

Resources

Change experiment poster with QR codes
iPad to view QR codes (Qrafter app or similar app downloaded)
Smart board to access resources from weebly (e.g. videos & evidence of change flow chart).
Paper, matches, metal pot, goggles
Spare clothes

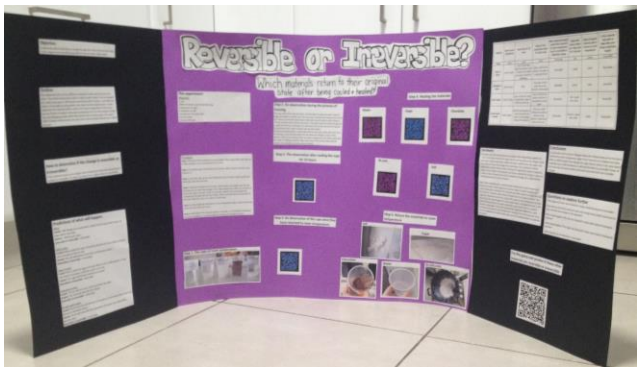
Lesson outline:

The teacher will (TTW) introduce physical & chemical change (see KSK). TTW give a student some clothes to put on over their clothes to explain the difference in changes (adapted from Lott & Jensen, 2012). TTW ask the students if the student looks different. As they respond yes, TTW ask if the clothes have made the student a different student (no it is still the same student). This represents physical change. TTW tell the students to now imagine that the clothes turned the student into a tiger (this

represents a chemical change as the student would have completely changed).

TTW introduce the concept of molecules. TTW get the student to demonstrate what happens to molecules when they go through a physical change and a chemical change (use water as an example). A small group of students will stand close together tightly not moving demonstrating what molecules do in a solid form (eg.ice). TTW pretend to add heat while the water molecules start moving slowly around each other (becoming a liquid - water). TTW add more heat while the students bounce around the room fast (becoming a gas). The students will (TSW) discuss how the students did not change, they just moved differently as this is just a physical change. TTW then get two students to pretend to crash into each other, the two students will put one arm in a jacket each and pretend they have made a new form (this is an example of what would happen in a chemical change).

TSW be given a piece of paper to make changes too (cut/scrunch/colour ect). TSW identify if it's a physical or chemical change. TTW eventually burn the paper to demonstrate a chemical change. TTW discuss even though they were able to change many properties of the paper (size, colour, shape) it was still paper until it was burned. *Note: TTW burn a small piece of paper away from the students in a metal pot. They will have water near by and matches will be kept well away from the students*



TSW use the class iPad to scan the Quick response codes on the poster with the QRafter app. TSW review the experiment on the poster making predictions of which substances are reversible or irreversible (water, chocolate in water, salt water, sugar in water & bi-carb in water). TSW watch the video's (see video links in resources on weebly http://kitchenchemistrychemical.weebly.com/lesson-1-resources.html) and document the signs that are indicating if each substance is reversible or irreversible. TSW come to a conclusion as to which were chemical or physical changes after being heated.

As a class TT & TSW brainstorm definitions of chemical & physical changes.

Simplification:	**Extension:**
Evidence of change flow chart displayed on the smart board (see resources page of weebly) -Video to help support understanding of molecules – Chemical & Physical changes (http://kitchenchemistrychemical.weebly.com/videos-to-extend-and-support-thinking.html)	-Video on atoms and molecules to extend understanding of molecules – Atoms and Molecules (http://kitchenchemistrychemical.weebly.com/videos-to-extend-and-support-thinking.html)

Evaluation: