Teacher Education Design Principle + code:	11. Teacher education should enable teachers to use questioning effectively and encourage children's questions in order to foster creativity and inquiry **TE: Question**
Specific Teacher Outcome(s):	11.1 Teacher should be able to use different forms of questioning at appropriate points to scaffold creative learning outcomes in science and mathematics, and in particular to encourage children's reflections and explanations, foster their independence and extend their inquiry.
Factors linked with:	**P:Ques;** **P:Scaff;** **P:RandR;** **AO:Creative**
Type of material (image – interview (int) – classroom extract (class):	**Classroom extract**
Originating from:	
Country report :	D4.3 UK Wales
Case:	Case 22
Episode:	Flapjack
Teacher:	Joanne
Age Group:	5-6
Selected episode present in D4.4 Appendix	No

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Questioning to support understanding and encourage discussion of the changing state of materials

The teacher capitalised on a baking activity to develop an understanding of the changing states of materials using questioning to encourage discussion and support understanding

T led group task.

T: And we will be looking at what 'state' they're in…A liquid, a solid, and gas….
Child: You could call it steam.

T gets out oats.

T:Is this a liquid or a solid?
Children *respond:* solid
T:Are oats liquid or solid?
T: It's dry not wet, it's a solid not a liquid.
Child: pours like a liquid.
Child: glitter.
T: Touch them. Talk about them. How do they feel?

She gives each child a pile of oats in front of them.

T: How do they feel?
T: Sugar *(repeats in Welsh)*: Is this a liquid or a solid?
T: looks little tiny bits, like glitter
T: Is it a liquid? Would it make a puddle? It looks like we are pouring it but it's teeeny tiny pieces

Each child gets sugar on pile.

Child: What's the next thing were getting?
T: What is happening as you touch?
Child: Raisins are dried grapes, they look old.
T: They are a solid, grapes are juicy. The sunshine dries them out, applies heat to them and they become raisins.
Child: Syrup, too much syrup is not healthy for you.

Children looking, watching, listening.

T: Butter, is it a liquid or a solid?

T gives out a little bit of butter to each child.

Child: Cheese is full of calcium.
T: Sugar, raisins, butter, oats… How many solid things do we have now? What is happening? Liquid, syrup is a liquid.

T gives out 'liquid' syrup. Children mix in on table as T mixes in bowl, children take turns with stirring bowl.

T: What's happening to your butter?
Child: Melting
T: melting because we have warm hands

T melts butter on stove.

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T: I'm going to give it some heat. It just goes inside. Dissolves sugar into liquid butter
T: Look now
Child: Germs
T: Yours is for experimenting with. Creating, exploring.
Child: Look at my butter!
Child: It's melting.
Child: The butter sticks it together.
T *showing melting butter on stove*: What's happening now? It's getting smaller and smaller.
T *counts spoonsful of sugar*: 1 2 3 ..
Add to liquid: It's dissolved.
T : Think
Children together: It's changing.
Children: Changing colour.
T: Can you see it? The liquid is the hot butter.
T: Temperature.
T: What's happened to the butter now?
T: I'm stirring it and stirring it.
T: add 2 spoonfuls of syrup.
Child: messy
T: Add the dried out grapes, raisins.
T *Counts out*: 1 2 3 *T counts and children join in.*

The children stir as they add the hot liquid.

T: Think now… What's going to happen to the raisins?
T: Stirring... need muscles to stir this
Child: Its messy isn't it
Child: Look at this…

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