

### Observer evaluation of the 'Sand on a sill' small group discussion

It is recommended that this activity and its evaluation are used twice, once before teaching about the rock cycle, and once afterwards.

Please circle the best answer or write a number in the blank boxes provided.

What is the age range of these pupils/students in years?

3-4	4-5	5-6	6-7
7-8	8-9	9-10	10-11
11-12	12-13	13-14	14-15
15-16	16-17	17-18	18+

Was this evaluation carried out before or after the group was taught about the rock cycle?

before/ after

What was the greatest number of realistic phases of activity described by the group in one sequence? - e.g. an early phase might be 'the grain was washed off the sill' (these may be encouraged by 'What might happen next?' or 'And then?' prompts)

How many different threads of ideas did the group follow? (these may be encouraged by 'Can you think of another idea?' prompts)

Did the group say that this discussion was linked to the rock cycle?

Yes / No

Did the group manage to travel right around the rock cycle in their thinking?

Yes / No

Did the group say that their discussion linked together elements of the ground, air, water, and life (lithosphere, atmosphere, hydrosphere and biosphere)?

Yes / No

After the discussion, was at least one member of the group able to draw a diagram linking several phases of sand-grain activity (at least four) together?

Yes / No

How many of these thirteen natural rock cycle processes were covered in the discussion (either by name or through description)[the processes are described in more detail below]:

- Weathering
- Erosion
- Transportation
- Deposition (laying down)
- Compaction
- Cementation
- Sedimentary rock-formation (lithification or diagenesis)
- Metamorphism
- Melting to a liquid
- Crystallisation (solidification)
- Intrusion
- Extrusion (eruption or volcanic eruption)
- Uplift

More detailed description of rock cycle processes:

- Weathering (break up or breakdown without movement away)
- Erosion (movement away)

- Transportation (movement, e.g. by gravity, currents)
- Deposition (laying down)
- Compaction (by pressure of material laid down on top)
- Cementation (by crystals growing from circulating fluids)
- Sedimentary rock-formation (lithification or diagenesis)
- Metamorphism (in the solid state, without melting)
- Melting to a liquid
- Crystallisation (solidification) from a liquid
- Intrusion (under pressure into surrounding rocks)
- Extrusion (eruption or volcanic eruption – under pressure at the Earth's surface)
- Uplift (causing erosion that will expose underlying rocks)