

# 20 teaching ideas for 'no pen day' in science

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**Question seeking answer.** Prepare questions and answers on separate 'post-its'. Give students a question or an answer. They circulate the lab trying to find their partner. Could be used as a starter, plenary or to reinforce learning during the lesson.

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**Student demo.** Students demonstrate a familiar practical or technique to the class. Instructions/guidance could be given by the audience; students could describe at the end what they would have done differently or different members of the class could focus on different aspects e.g. safety, accuracy etc.

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3

**Model equation.** Using small building bricks or sticky circles/stars, students demonstrate the equation for a chemical reaction to illustrate how atoms in the reactants change places to form products.

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4

**Mime that moment!** Volunteers are given a moment in scientific history which they must mime to the class e.g. Newton and gravity or spectrum of light; Jenner and vaccination; Alfred Nobel and dynamite.

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5

**What am I?** Students choose a key word from the topic/lesson. They are asked questions which have yes or no answers. The number of questions is limited e.g. 3, 5 or 7 questions. Only one attempt at suggesting the correct answer is allowed.

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6

**Shout equations.** Divide the class into groups of four. Give each group an equation e.g. acid + metal → salt + hydrogen. Each person in the group chooses a word from the equation. They shout their words simultaneously. Can the class construct the correct equation?

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7

**Quipu.** Quipu is knotted string used by the Inca for collecting data and keeping records. Students design their own Quipu for recording the results of a simple experiment. They could use different coloured cord, different knots and different lengths of cord.

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8

**Model making.** Using old tights/socks, wool and darning needles, students make models of specialised cells; blood cells; nephron, root hairs etc.

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9

**Hide and seek.** Working in small groups, one student 'hides' in the Periodic Table. Others in the group must ask questions with yes/no answers to find the hidden person. Limit the number of questions for extra challenge.

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10

**Twinkle twinkle.** Students must fit a key idea to a simple tune and (for the brave) sing it!

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11

**Finger drawing.** Working in pairs or small groups, show the 'sketcher' in each group the name of something they must outline in the air using their finger(s) e.g. plant cell, circuit symbol, apparatus. The others in their group must guess what the drawing is showing. Miming is forbidden!

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12

**Knot correct.** Give each student a length of string. Demo a familiar technique or practical or describe a process/concept but litter your demo/description with mistakes. When they spot a mistake, students tie a knot in their string. Compare strings. What does each knot represent?

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13

**Equation anarchy.** Put different parts of an equation(s) on 'post-its' e.g. speed (m/s), distance (m), time (s). Students must find their relevant partners and show the equation e.g. arms outstretched to represent 'equals', arms linked to show 'multiply'. Can move on to rearranging the equation.

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14

**Adjectives only.** Groups of 4-8 students split into two teams. Each group is given a selection of key nouns on folded slips of paper. One team times (30-60 seconds) whilst a player in the opposing team takes a paper slip and describes the science noun e.g. virus using only adjectives. When guessed correctly another slip is taken and described, until the time runs out. Teams swap roles.

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15

**What's the connection?** Show two or three images and ask what might connect them e.g. rock salt mine, thermometer, snowfall on road.

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16

**The rooms in my house.** Break down a new concept into simple steps. Students imagine their home and moving from room to room in sequence. Present each step. In their minds eye they attach each new step to something in the room they are imagining. What can they recall at the end of the lesson?

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17

**Video commentary.** Students work in pairs or small groups. Show a short, silent video clip several times or on a loop. Students come up with a commentary which they have to remember as nothing is allowed to be written down!

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18

**Construction challenge.** Uses limited materials and time. Examples include building a bridge to carry a tennis ball between two tables; making a solar cooker; making light travel from **a** to **b** around obstacles; building a choice-chamber.

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19

**Word chain.** Divide class into groups. Give a keyword e.g. 'force'. This is the start. In their groups, students take turns to give a word with a scientific link to the previous word e.g. 'force' – 'friction' – 'streamline'. How many links can they make in 20 seconds? What were they and why?

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20

**Would I lie to you?** Give students an unfamiliar scientific keyword and definition which may be true or false. Taking turns, students read out their word and meaning and the others indicate whether they think the definition is true/false. Try definitions of more familiar key words which are 'correct' or 'incorrect' for a subtle variation.