OPEN THE BOX

Can you link the **contents** of the box to the subject of today's session?

DIFFERENTIATION

What does effective differentiation look like?

Share practical strategies

Consider how we can move forward.

A **low access high challenge** starter

We'll come back to this…

THE PROBLEM WITH DIFFERENTIATION

The unsustainable lesson
One lesson needs to be delivered in thirty different ways with thirty different outcomes.

Worksheet overkill
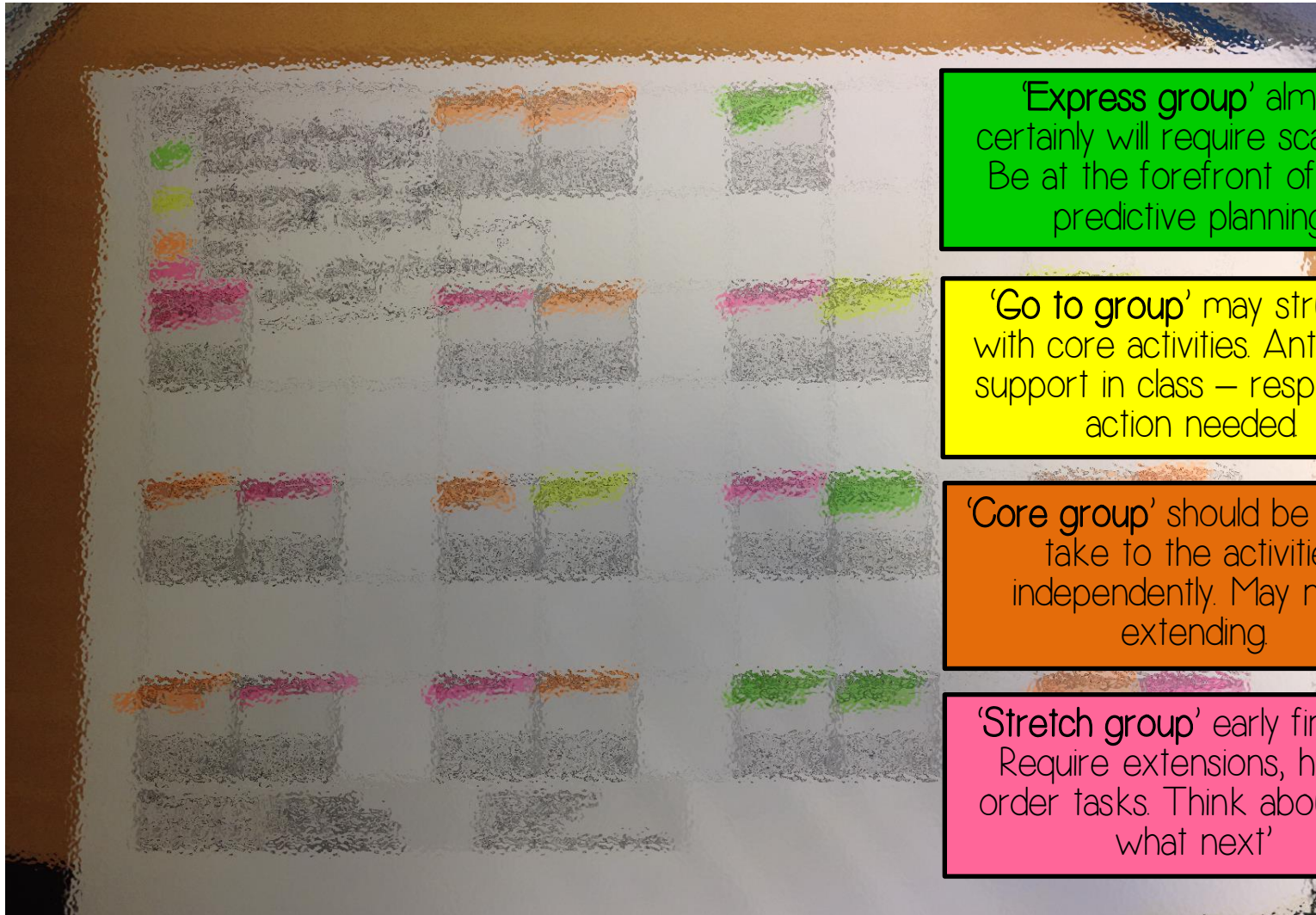Thirty different worksheets for thirty different students.

Limiting learners
Different outcome based on prior ability (i.e. all, most, some) nullifies challenge..

EFFECTIVE DIFFERENTIATION

1. Knowing your students
2. Knowing your impact
3. Predictive planning, scaffolding & responsive action
4. Learning without limits

NO 1. KNOW YOUR STUDENTS

**'Express group'** almost certainly will require scaffolds. Be at the forefront of your predictive planning.

'Go to group' may struggle with core activities. Anticipate support in class – responsive action needed.

'Core group' should be able to take to the activities independently. May need extending.

'Stretch group' early finishers. Require extensions, higher order tasks. Think about 'the what next'

A seating plan to **pool needs**, ensure scaffolds are in place and focus intervention in class.

Game changers
(i.e. underperformers)

PC 1 data

Recent
assessment
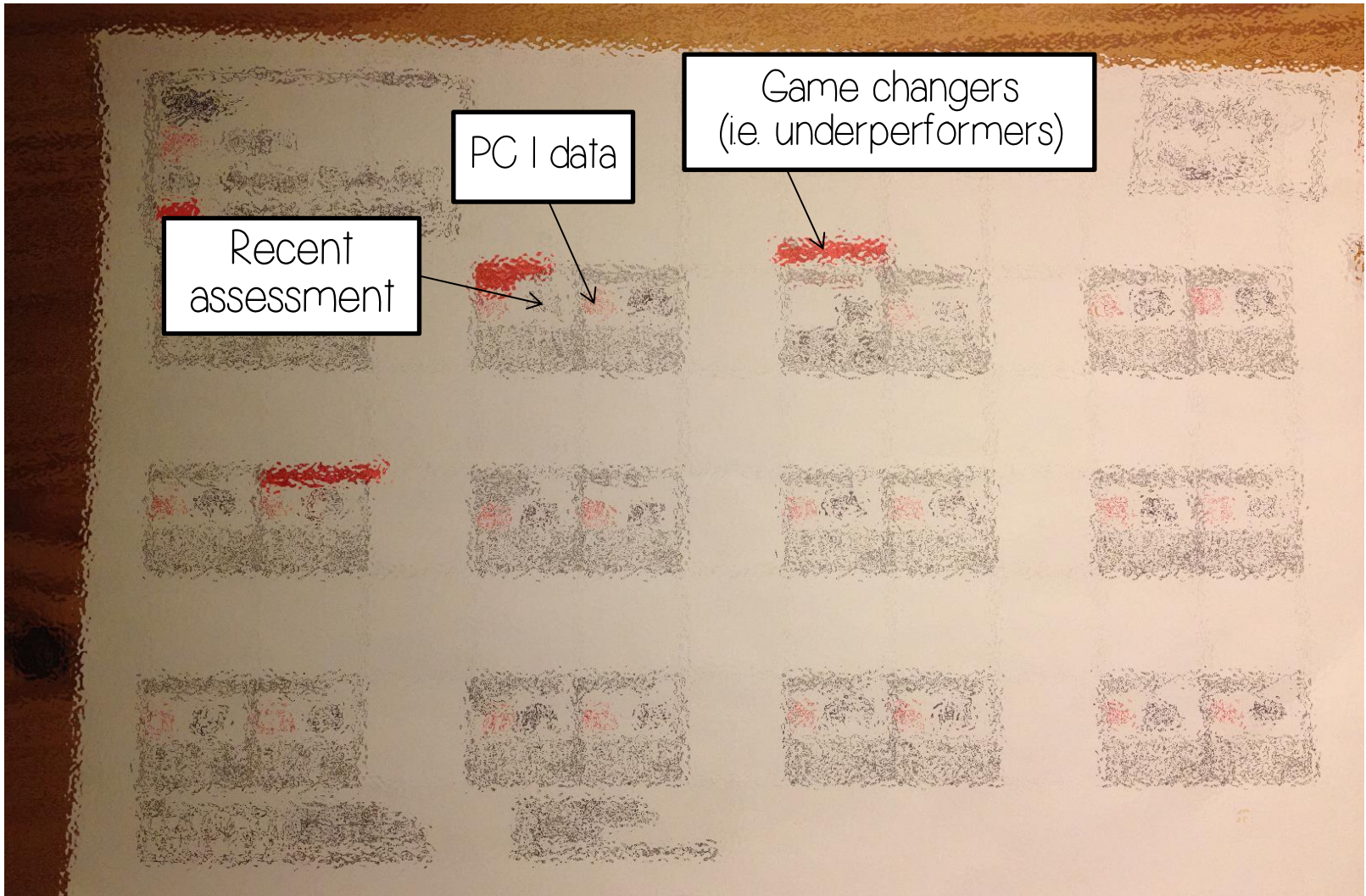
A seating plan to chart progress, identify game changers and 'focus my radar'

NO 2. KNOW YOUR IMPACT

Hard results and quality of work in books & folders over time – are the **true measure** of successful differentiation.

If outcomes in your class, subject area or faculty are robust or improving, then you are doing 'differentiation' effectively.

If the reverse is true, if students are failing to engage or make progress, something is amiss and needs addressing.

Every progress check is an opportunity to evaluate the differentiation within our classrooms.

NO 3. PREDICTIVE PLANNING, SCAFFOLDING & RESPONSIVE ACTION

'Or meeting the challenge…'

Anticipated challenges

Met through conventional lesson and task planning with our understanding of our students' entitlements, abilities and learning needs at the forefront of our thinking.

Unanticipated challenges

About responding to whole-class and individual needs 'in the moment'. The knowledge, expertise and experience of the teacher is key. Teaching as a craft.

ANTICIPATED CHALLENGES

We can meet anticipated challenges through:

Modelling

Success criteria

Worked answers

Sentence starters

Thinking grids

Writing frames

Glossaries, literacy and numeracy mats

MODELLING

Display the learning outcome at the start of the learning process. Clarifies the learning journey and gives students something concrete to work towards.

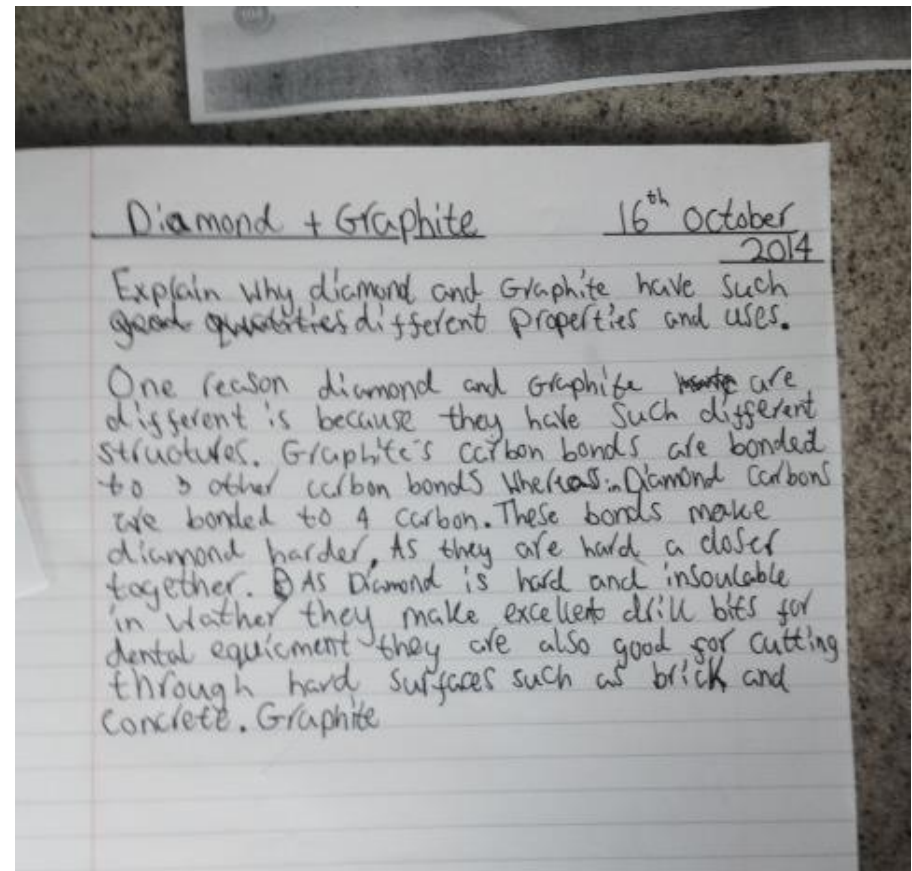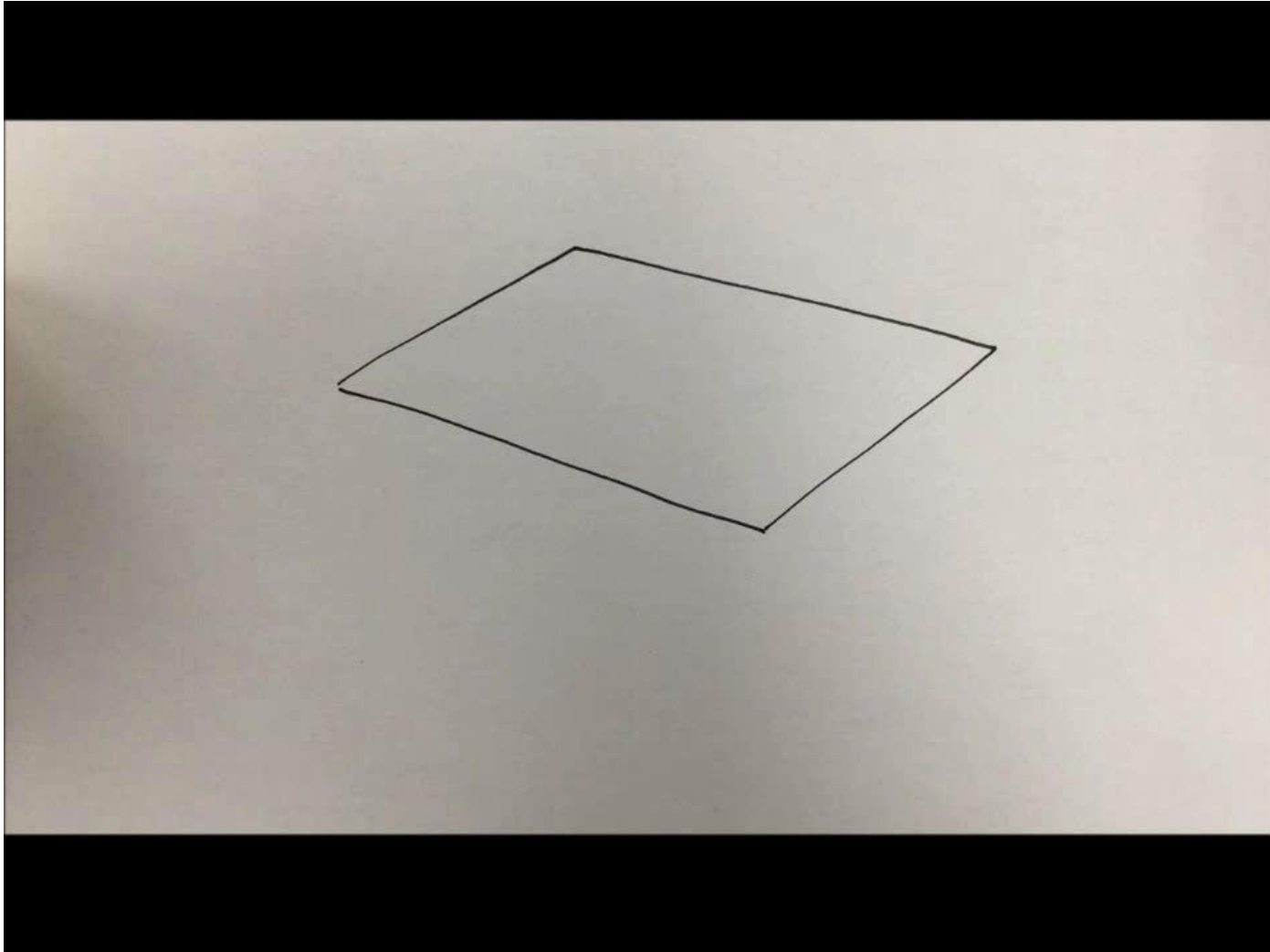Use a visualizer, your smartphone or **Hyperlapse App.**

Photo taken on iPhone, sent to laptop, then displayed on projector.

Hyperlapse – modelling annotated DAT diagrams

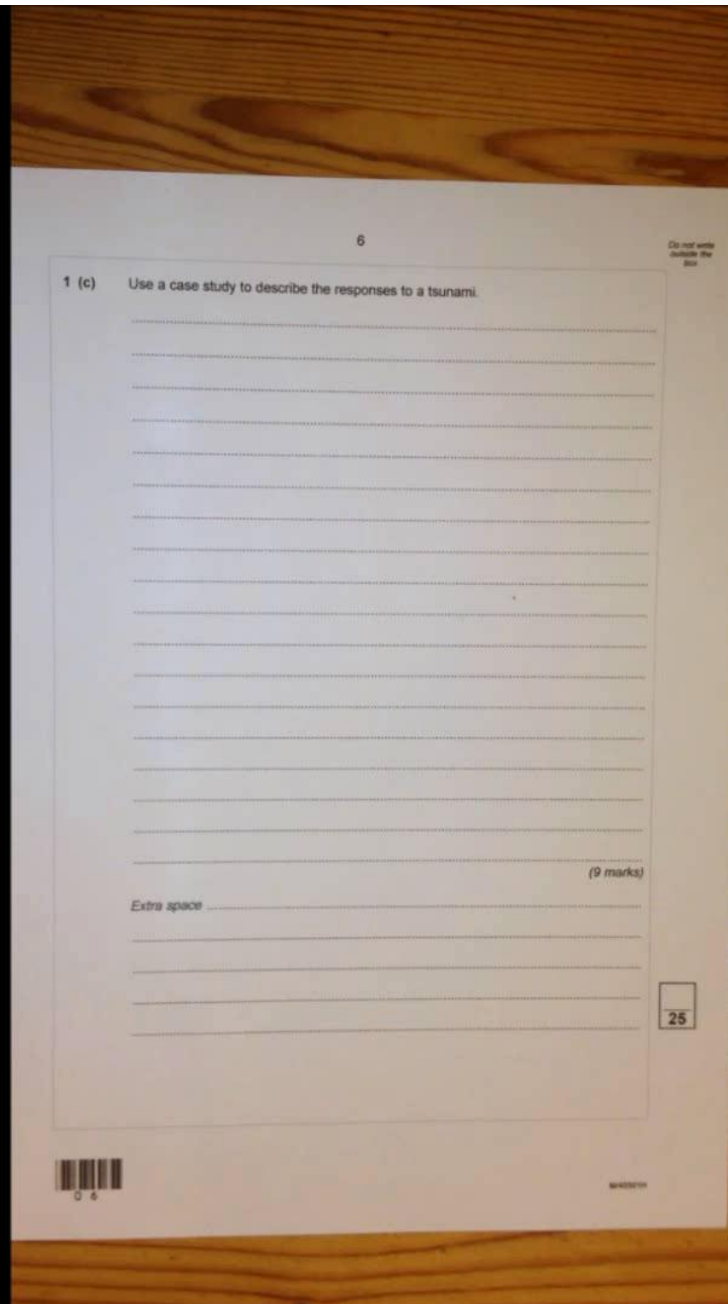# Hyperlapse – modelling 8 markers in Geography

Level 1

Describes responses.
Statements lack order.
No case study used.
Reasonable SPaG.

Level 2

Begins to categorise responses.
Statements ordered.
Case study used.
Accurate SPaG.

Level 3

Categorises responses.
Statements ordered and linked.
Case study used in depth throughout.
Precise SPaG.

6

1 (c)   Use a case study to describe the responses to a tsunami.

(9 marks)

Extra space

25

Level 3 Essay Modelled

capacity to as low as 20%. Coniferous trees on the other hand provide an interception store all year round, which can be as effective as 90% interception capacity.

Human factors are also incredibly important in determining river discharge. Urbanisation, with its hard architecture and impermeable surfaces, vastly reduces interception, infiltration and throughflow. Instead lag time is reduced and peak discharge increased as surface runoff levels rise. This was the case in Boscastle, where extensive car parking either side of the Valency resulted in high levels of 'sheet wash' and overland flow. That said, our urban areas can be stores of water. Effective management including dam, sewer and reservoir schemes can lower discharge and increase lag time.

Land use including deforestation, afforestation and agriculture is vastly important in deter... river discharge. Deforestation reduces the natural interception store of a drainage basin, whilst ...tion increases it. Lag time is faster and peak is higher in a deforested catchment compared ...sted or afforested catchment. Farming can also have a huge impact on the interception ...d subsequently river discharge. Crops intercept as little as 7% of total precipitation which ...s the potential for ground to become saturated and for surface runoff to occur. Bare soil, ...y during times of ploughing or following harvest, can also increase runoff and discharge.

To summarise, physical and human factors both play a part in determining river discharge. Discharge within any river, as evidenced in the case of Boscastle, is very often the result of an interaction between a range of factors: both physical and human.

Level 3 (Detailed)
Explains clearly how people cause flooding.

Level 3 (Detailed)
Uses case studies/detail and purpose in exemplification. Specific terminology is used throughout.

Level 3 (Detailed)
Clearly appreciates sequence of events set in motion linked to drainage basin hydrological cycle.

Level 3 (Detailed)
Explicit assessment.

SUCCESS CRITERIA

Unpack what's required to hit different levels or grades. Use the exam specification or mark schemes.

Deepens feedback

Success Criteria and Models for 8 Mark Questions

There are 3 levels for extended writing at Geography GCSE – Level 1 (basic), Level 2 (clear) and Level 3 (detailed). Spelling, punctuation and grammar are also assessed

Level 1 (1-4 marks)
Describes effects of a volcano.
May not include causes.
Statements are general in a random order.
No case study used or generic information.
Reasonable spelling, punctuation and grammar (i.e. some mistakes).

People ran away from the volcano. Some people were killed. Ash and lava came out of the volcano. Some rivers filled with ash killing fish. Trees were knocked down.

Level 2 (Clear) (5-6 marks)
Begin to categorise – such as primary and secondary – to give a clearer structure.
Causes of eruption are clear.
Statements are linked.
There is clear reference to the case study named.
More accurate spelling, punctuation and grammar (i.e. few mistakes)

Mount St Helens, USA erupted in 1980. The eruption was caused by an earthquake which resulted in a lateral blast. Primary effects were pyroclastic flows which killed 57 people. Infrastructure was destroyed and ash drifts blocked roads. Ash and debris fell in Toutle River and Spirit Lake killing wildlife. Secondary effects included lahars - days later ash mixed with rain water to create lahars – super hot volcanic mud flows.

Level 3 (Detailed) (7-8 marks)
Clear structure - primary and secondary effects - in explicit classification.
Causes of eruption are specific and detailed.
Statements are logically ordered and linked.
Detailed references to specific case study.
Accurate spelling, punctuation and grammar (i.e. no mistakes)

Mount St Helens is a composite volcano, formed by the subduction of the Juan de Fuca plate beneath the North American plate. Mount St Helens, Washington state, USA erupted on 18th May 1980. The eruption was triggered by an earthquake which caused a landslide on the north side of the volcano. A cryptodome had formed on the side of the volcano, plugging the secondary vent. This burst and a lateral blast created a 27km wipeout zone. Primary effects included pyroclastic flows which killed 57, including locals living on the slopes like Truman. Infrastructure was destroyed and drifts up to a metre deep blocked roads. Ash and debris fell in Toutle River and Spirit Lake killing wildlife and harming the ecosystems. Secondary effects included lahars – these are volcanic mud flows and are caused as ash mixes with rain or river water. A positive secondary effect has been the increased tourism generated by Mount St Helens for Washington State.

12th September 2014
Exam Technique Answers/Explanation

Open Evening Tours

Feedback is based on success criteria.

Success Criteria

Level 1 (1 – 2 marks)

- Begins to explain.
- Sentence and paragraph structure may be less sequenced.
- Some use of appropriate terminology.

Level 2 (3 – 4 marks)

- Explanation is clear. ✓
- Sentence and paragraph structure is well-sequenced. ✓
- Diagrams are included. ✓
- Appropriate geographical terminology is used throughout. ✓

Destructive .

Explain how volcanoes occur at plate. Margins.

sp. two

Destructive plate margins are when (to) plates are pushing against each other (Juan de Fuca and North American). The Oceanic plate is subducted beneath the continental plate as it is denser. The plate subducts into the mantle where it melts at 1000°C (1000°C). The rock metamorphisises and turns into magma. This magma rises upwards and is released in violent, composite volcanoes.

Composite → volcano

sea

Continental Plate

Explain how volcanoes occur at margins.

Constructive plate margins two plates move away other and a mid-ocean ridge American and Eurasian plate) move apart rising less dense magma) goes through the gap. O the volcanoes will rise out the gaps between the two o forming islands (eg. Icelar

Undw

Mantle

Con
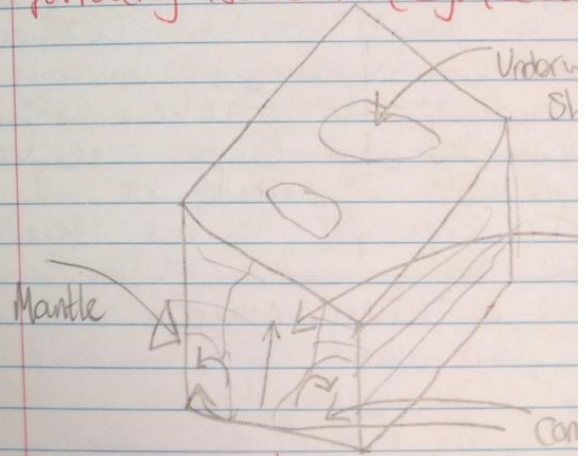
Level 2 4/4.

Excellent explanation Se structure is well-sequenc are well used. Approp used throughout.

Practice Question

For a volcano you have studied describe the effects of an eruption (6 marks)

LEVELS

- **Level 3**
  Descriptions unclear, no case study, little coherence.
- **Level 4**
  Descriptions lack depth, case study named, few key terms.
- **Level 5**
  Detailed description of effects, case study named and located, correct use of key terms.
- **Level 6**
  Detailed description of effects, case study located and used in depth, begins to categorise effects, key terms used throughout.
- **Level 7**
  Detailed description of effects, case study located and used in depth, precisely categorises effects, confident use of key terms.

WORKED ANSWERS

Break down the learning process.

A clear road map will help all students arrive at the same destination.

Use **Show Me App**.

12. a) Work out the size of angle x in the right angled triangle shown below. Give your answer correct to two significant figures

Trigonometry ALERT!

Diagram **NOT** accurately drawn

This side is the Hypotenuse

6 cm

This side is OPPOSITE (O) from x

Keep forgetting SOHCAHTOA? Try: Some Old Hags Cant Always Handle Their Old Age

$x°$

10 cm

This side is ADJACENT(A) (next to) to x

Which Trig formula do we want? Find the one that has A and O. It's TAN

Using the Trig formulae

Cover up T because we want to find this and the formula is $T = \dfrac{O}{A}$

O / S × H — Sin
A / C × H — Cos
O / T × A — Tan

REMEMBER: Use Tan^{-1} on your calculator When you want to find an angle

$x = 31$

(3)

Tan^{-1} $x = \dfrac{6}{10} = 30.96$

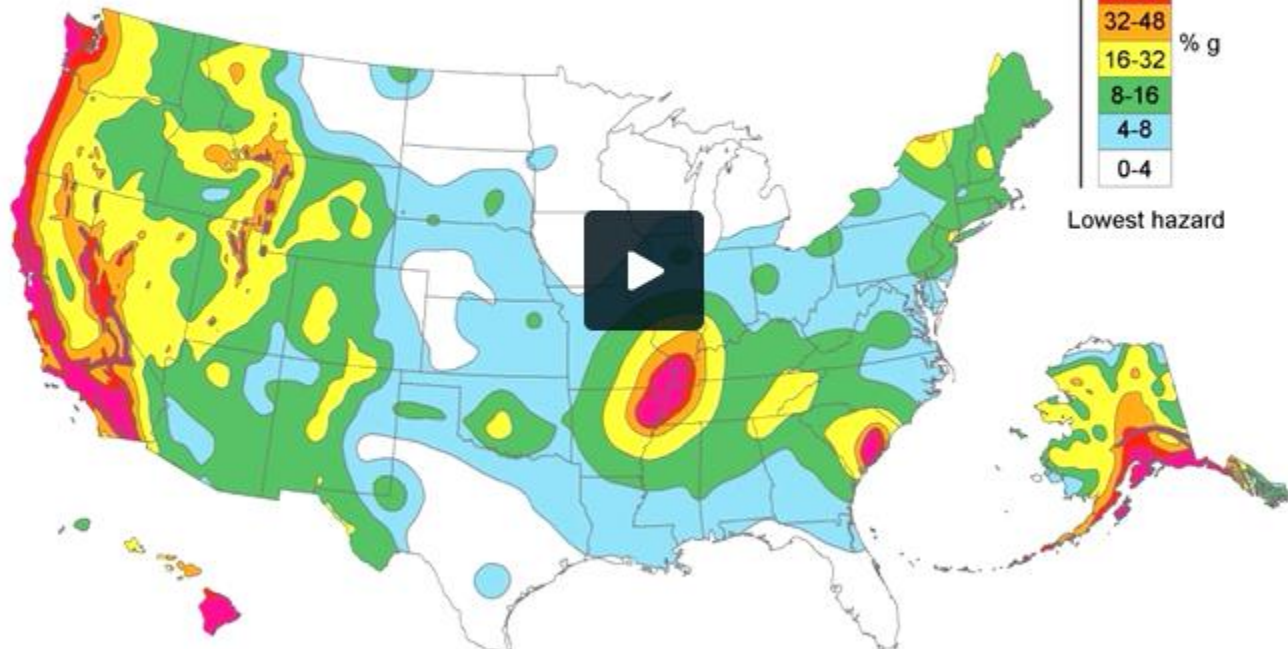2 significant figures round up to 31

shift | tan-1 | (| 6 | ÷ | 1 | 0 |) | =

Use brackets to make sure your calculator does what you want it to. How else could you do it?

Show Me – describing patterns from maps

http://www.showme.com/sh/?h=NEvVrhg
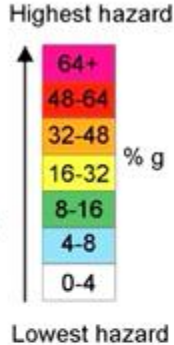
SENTENCE STARTERS

Getting going can be hard. Clear ways to start can be effective for all students.

Sentence Starters

- The Soufriere Hills is a ………………… volcano located in …………………
- The eruption happened on ……………………………
- There were social, economic and environmental effects ………………………………………
- These included ………………………………………………

THINKING GRIDS

Structuring the thinking process can ensure students get even more from the learning.

Exploratree www.exploratree.org.uk

Feel inside

See

Hear

Touch

Smell

Taste

What is life like in a **favela?** Watch the clip and fill out the **sensogram** above.

UNANTICIPATED CHALLENGES

The improvised response. Or 'what to do when best laid plans go awry'. How would you respond to these **in-class situations**?

1. Trevor puts his hand up and asks you to spell 'denitrifying'.

2. 10 minutes in, Winnie 'a less-able student', has not answered a thing.

3. As you circulate, you notice a number of students not using correct axes.

4. Nigel has written a page and a half of scrawled nonsense and is swinging back in his chair.

5. I come to Gertrude, who is more able, but prone to long and wordy answers that do not address the question.

6. There are 10 minutes to go and the class are working hard. Do I stop for the peer-assessment task I had originally planned?

1. Trevor puts his hand up and asks to spell 'denitrifying'.

Praise Trevor publicly for using the term. Refer him and the whole class to the unit glossary and repeat the expectation to everyone that you want to see key vocabulary in extended writing.

2. 10 minutes in, Winnie 'a less-able student', has not answered a thing.

Model the first answer and ask her to finish it. Provide her with a numeracy mat that includes further worked answers and key points. Go back in 2 minutes.

3. As you circulate, you notice students a number of students not using correct axes.

Find a student who is doing this correctly. Use a visualizer or take a photo and display this on the overhead. Flag it up to the whole group.

4. Nigel has written a page and a half of scrawled nonsense and is swinging back in his chair.

I tell him to redraft the first paragraph, this time using the paragraph structure I have given him. I sense potential defiance and remind him that it is break time after the lesson. I go back in 10 minutes.

5. I come to Gertrude, who is more able, but prone to long and wordy answers that do not address the question.

I tactfully ask Gertrude to cut out 10 unnecessary words before continuing and remind her of the importance of timings in exams. I go back in 5 minutes.
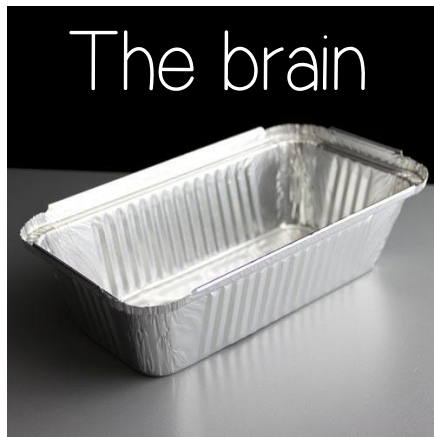
6. There are 10 minutes to go and the class are working hard. Do I stop for the peer-assessment task I had originally planned?

No. We can worry about this next lesson.

NO 4. LEARNING WITHOUT LIMITS

Our job is to challenge students to go beyond what they can do now, not to keep them rooted to their current spot.
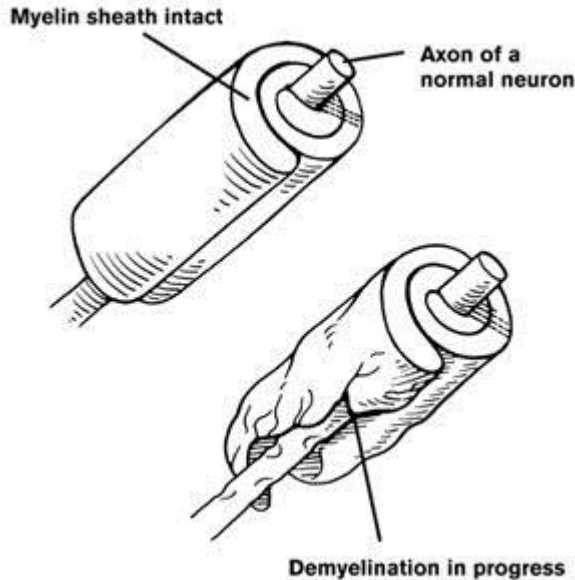
THE BIOLOGY OF LEARNING SOMETHING

The brain

Axons

Myelin

THE LEARNING CONDUCTOR

Myelin sheath intact

Axon of a normal neuron

Demyelination in progress

Myelin is a protein. It coats and insulates nerves and conducts impulses from the brain.

When we learn something new, myelin is made.

Exposure to **challenge** causes production.

TEACH TO **CHALLENGE**

Cognitive thinking must be challenged for myelin to be created.

Once created, myelin speeds thinking function.

Intelligence is not fixed. It can be grown.

All humans have the capacity to be successful as long as they are challenged to do so.

Setting the bar too low will inhibit brain function over time.

HIGH CHALLENGE, HIGH SUPPORT

Set the bar **high**.

Put in place the **support** and **scaffolding** required to nudge them all in this direction.

Not all students may reach the 'bar', but removing it for some in the name of 'differentiation' defeats the process of learning.

And defeats the brain.

REFLECTION & TAKEAWAYS

Think of a lesson you taught recently – could the differentiation have been improved?

What will you take from today's session?

What will you do differently as a result?

Please take a booklet of differentiation strategies.

5 WAYS TO MAKE A DIFFERENCE

Model everything
Model the learning process, outcome and skills.

Scaffold everything
Provide sentence starters, writing frames, numeracy mats and glossaries.

Live mark
Circulate and mark your students' work in class.

Personalise feedback
Give bespoke feedback based on success criteria.

Prioritise MAD time
Ensure all students get a chance to deepen their understanding through well planned MAD time.