Y RHWYDWAITH YMCHWIL IECHYD MEWN YSGOLION

THE SCHOOL HEALTH RESEARCH NETWORK

Be a Local Data Scientist Using your School's SHRN Data

A Lesson Plan and Full Scheme of Learning for Year 9

Rhwydwaith Ysgolion Cymru sy'n Hybu Iechyd a Lles
Welsh Network of Health and Well-being Promoting Schools

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hbsc HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN

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This resource is designed for schools participating in The SHRN Student Health and Well-being Survey in Secondary Schools and aims to support data literacy, scientific thinking and well-being education.

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This resource was made possible thanks to the funding and support of the Widening Participation Team at Cardiff University. Special thanks to Iwan Hopkins, Senior Schools and Colleges Liaison Officer, Cardiff University.

With sincere thanks to Sarah Smith, Faculty Leader at Whitchurch High School, Cardiff, whose extensive classroom experience and whole-school perspective provided invaluable insight during the development of this lesson plan. Her expertise helped shape an approach that is both pedagogically sound and responsive to the practical realities of secondary school teaching. And to John Grieves, Numeracy Co-ordinator, also from Whitchurch High School, whose insight also informed our work.

Contents

Teacher overview

Key lesson information

- **Subject:** Science (with links to Maths, Health and Well-being, and the Digital Competence Framework (DCF).
- **Year group:** Year 9.
- **Duration:** 60 mins.

Core theme

Learners explore SHRN data from their own school. They identify patterns, compare groups and suggest practical, fair health and well-being ideas linked to everyday school life.

What the lesson covers

This lesson builds on learners' Progression Step 3 experiences, with reading charts and earlier well-being discussions from tutor time that reference Health and Well-being.

By the end of the lesson, learners will:

- **Identify a clear pattern in SHRN data.**
- **Explain a possible reason.**
- **Use numbers accurately to support their ideas.**
- **Name one limitation of the data.**
- **Suggest a fair action the school could try.**
- **Understand how anonymised school-level data is used responsibly.**

Teacher overview

Learning objectives at a glance

Spot patterns
Identify key trends and inequalities in anonymised SHRN graphs and tables.

Make sense of real data
Interpret real-world health and well-being data from our school.

Think like a scientist
Use scientific reasoning to suggest fair, evidence-based actions.

Build digital skills
Use digital tools to interpret and visualise data clearly.

Understand real-life impact
See how research and evidence are used to make decisions in Wales.

Communicate clearly
Explain findings confidently using numbers, comparisons and reasoning.

Use data responsibly
Understand how data can be misread or misinterpreted - and how to avoid this.

Curriculum for Wales Map and Digital Competence Framework (DCF)

Curriculum Skills Map

Science and technology
Explain with evidence
Evidence based explanations and data reasoning.

Health and well-being
Understand what shapes outcomes
How behaviours and environments influence health and well-being.

Mathematics and numeracy
Make sense of graphs
Reading, comparing and presenting different graph types.

Digital competence
Explore data digitally
Using digital tools to visualise, analyse and interpret information.

Humanities
Think in context
Considering social/cultural factors that influence health and well-being.

Literacy and communications
Communicate with Confidence
Clear, confident communication of findings.

Teacher overview

By the end of the lesson, learners will:

- **Make sense of their school's SHRN data and spot what stands out.**
- **Use scientific reasoning to suggest fair, evidence based actions.**
- **Compare groups and trends using numerical evidence.**
- **Communicate their findings clearly, using simple reasoning or the 3–2–1 frame, when helpful.**
- **Understand how data is anonymised and used responsibly.**

This lesson plan supports Curriculum for Wales aims around ethical inquiry, data literacy, collaboration, and evidence informed thinking.

Accessing your school-level SHRN Data

To use this resource, your school needs to have taken part in **The SHRN Student Health and Well-being Survey** and have access to your school-level report.

If you are unable to locate your school report, please ask your school's Health and Well-being lead to email the **SHRN team** to request a copy.

It is recommended that teachers choose two or three charts relevant to Year 9 in advance of the lesson.

Section 1: Lesson preparation

1.1 A Checklist for teachers

Use this checklist to prepare your materials, data and safeguarding steps before the lesson:

1. Open your school's SHRN school level report

Choose two to three charts from your school's SHRN report. Pick charts that:

- **Link to current school priorities (e.g. sleep, screen time and activity).**
- **Show a clear pattern or difference that learners can easily spot.**
- **Connect to ongoing health and well-being themes, such as routines, readiness to learn, or digital habits.**

Examples:

- **If energy drink use is higher than expected, choose this chart, it links well to Well-being, Food and Nutrition, and Science.**
- **If lateness is a focus, select sleep or screen time charts (e.g. 'Learners who usually go to bed at 11:30pm or later').**

These choices help learners see how SHRN data links to tutor time, PSE and wider pastoral work.

Keep the selected charts accessible during the lesson (printed or projected).

2. Safeguarding considerations

Charts on emotions, ACEs or substances need careful managing. Be ready to signpost learners to the right support if needed.

3. Download pptx, learner worksheets and prompt cards before the lesson. Have printed copies ready for groups that need them.

4. Read the worked example in Section 3 and practise a 30-second model explanation.

5. Have the Public Health Wales SHRN Data Dashboard link open for optional extension work (e.g. comparing your school's results with the rest of schools in Wales). Only use this if digital access is available, it is not required for the main lesson.

Section 2: Lesson at a glance

2.1 Lesson focus

Learners use SHRN charts to spot patterns, explain possible reasons and suggest one realistic school action.

2.2 Overview of lesson flow (60 mins, flexible)

Stage	Time (mins)	Purpose
What Data Scientists do and Warm-up Questions	10	Learners make a quick prediction about screen-time, compare it with overall Wales data, and share one surprise.
Step 1: Explore SHRN data	10	Learners look closely at their chart for two to three minutes, discuss what patterns they notice, and share one key insight.
Step 2: Analyse and Explain	20 (15 mins discussion and 5 mins writing)	Groups use the scaffold to make sense of their chart: spot a pattern, explain a reason, name a limitation and suggest one fair school action.
Plenary	15	Groups share a short summary they feel is most important and reflect on what the data shows about their school and justify why. **Note:** Your next lesson could compare two different years, explore another chart, or look at how a suggested action could be implemented.

Section 3: Full lesson plan and delivery

3.1 How to use this section

This section provides a step-by-step guide for delivering the lesson.

The accompanying MS PowerPoint contains all learner facing slides and should be used alongside this section.

3.2 Teaching steps

Lesson outline

Warm-up (10 mins)

A quick starter using a prediction question and a comparison with national data.

Step 1

Explore the data (10 mins)

Groups look closely at their allocated SHRN chart and use prompt questions to notice patterns and differences. Focus on patterns, comparisons and early reasoning.

Step 2

Analyse and explain (20 mins)

Learners use the scaffold to make sense of their chart:

Spot a pattern ▶	Give a reason ▶
Name a weakness ▶	Suggest a fair action.

Plenary (15 mins)

Groups give short micro presentations, followed by a whole class reflection. Use WWW (What Went Well) and EBI (Even Better If) for quick feedback if time allows. End with an optional two-minute exit ticket.

Warm-up (10 mins)

Warm-up guidance

- Keep answers short.
- Ask for quick predictions.
- Compare guesses with your school-level data.
- Avoid long discussions.

Section 3: Full lesson plan and delivery

3.3 Warm up

Slide 1 - Your screen-time guess

Teacher instructions:

Start by asking:

'How many hours do you think young people across Wales spend on screens at night?'

(Phones, gaming, streaming, socials - your best guess!)

Take a few guesses, then tell them you're about to check against your own school's data.

Slide 2 - Compare with the national data

Ask:

'Does this match what you predicted? What's different?'

'Now that we've checked your guesses against our school data, we can start thinking like a data scientist - spotting patterns and asking why they happen.'

Slide 3 - What do data scientists do?

Now that learners have compared their guesses with data from their own school, introduce the mindset:

Data scientists spot patterns, compare groups and ask why something might be happening.

In short: they find stories in the data.

Slide 4 - Spot the screen-time surprises

- Give groups two to three mins to look at the chart first.
- Prompt: *'Why might this be happening?'*
- Pair up and share for 30-seconds to get everyone involved and talking.

Section 3: Full lesson plan and delivery

3.4 Step 1 - Explore the data (15 mins)

Purpose:
Reading graphs, spotting trends, noticing differences, and beginning to think like data scientists.

Set-up

Give each group **one of the SHRN charts you selected in advance (e.g. sleep, physical activity or screen time).**

Choose charts that show change over time or differences between groups, so there's something meaningful to notice.

Learning focus:
Reading graphs, spotting patterns, noticing differences and forming early data scientist type questions.

Prompt cards (one per group)

Groups work with ***different*** SHRN charts, but all groups use the same style of prompt cards, so each group brings a different angle.

How to run Step 1

- Give groups two to three mins to look at the chart first.
- Give each group one prompt card.
  These can be downloaded here.
- Two to three mins discussion.
- Groups share one key insight.
- Emphasise there are no 'right answers'.
- Keep discussion focused on the data, not personal habits.

Section 3: Full lesson plan and delivery

3.5 Step 2 - Analyse and explain (15 mins discussion and 5 mins writing)

Task for learners:

Write a short proposal to the Headteacher based on your chart. Suggest one fair, realistic action the school could try (e.g. PSE, tutor time or assemblies).

Group task:

Scaffold for thinking

- Spot one pattern: What stands out?
- Give one reason: Why might this be happening?
- Name one weakness: What does the chart not tell us?
- Suggest one action: One fair, realistic school step.

Teacher notes

- Keep language neutral and non-judgemental.
- Invite two to three groups to share their proposals.
- Model sentence you can give to learners:
  'The data shows X. This suggests Y because...'

Write your proposal (four to five sentences)

Use the scaffold to explain:

1. The pattern.
2. A reason.
3. A limitation.
4. One fair action.

Section 3: Full lesson plan and delivery

3.5 Step 2 (continued) - Analyse and explain (15 mins discussion and 5 mins writing)

Write a short (four to five sentence) proposal to the Headteacher

Learners answer:

- What pattern did you notice?
- What might be causing it?
- How could the school support this in PSE or tutor time?
- Why is your idea fair for everyone?

Teacher notes for delivery

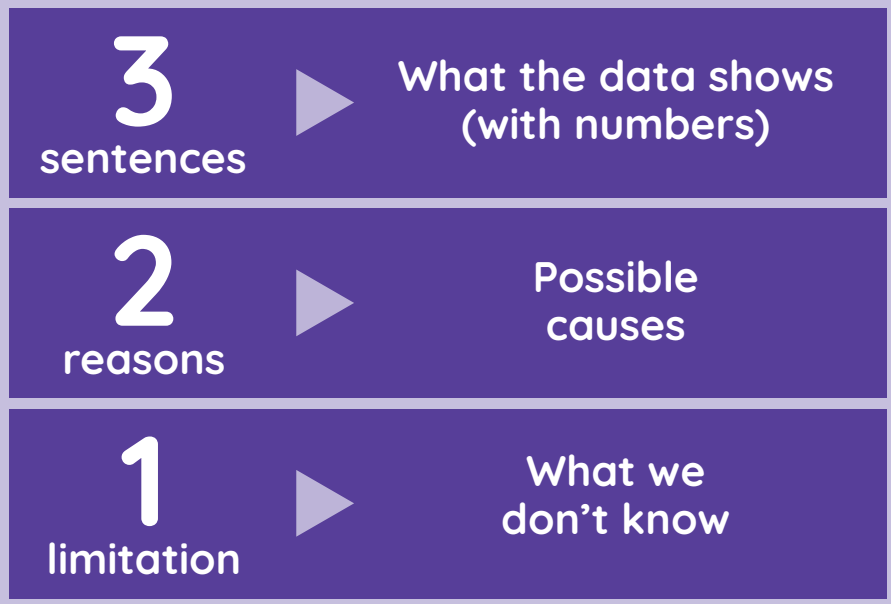
Use neutral, non-judgemental language when discussing patterns. Invite two to three groups to share their proposals with the wider class.

Using the 3–2–1 Analysis Frame (optional support tool)

3 sentences: What the data shows (with numbers)

2 reasons: Possible causes

1 weakness: What we don't know



Section 3: Full lesson plan and delivery

Extension task (optional)

Learners can compare their chart with national data using the SHRN Data Dashboard - Public Health Wales

Example comparison provided below.

If digital access is available, learners can compare their school findings with the **SHRN Data Dashboard - Public Health Wales**. This helps learners see how their school compares with Wales as a whole.

They can then write a short paragraph comparing their school vs national data.

Worked example

'Our data shows that 42% of learners in our school find sleep challenging. The Wales average for Year 9 is 45%. This means our school is almost the same as the Wales average.

The difference is small and could just be because different people answered the survey. Overall, our school's sleep results are very similar to the national picture.'

Teacher notes

Small percentage differences don't always show a real change. For example, 42% vs 45% is so close that the overall pattern is effectively the same. Results can vary slightly because different learners took part or because numbers naturally shift each year.

Help learners recognise this so they don't over interpret tiny gaps, and instead focus on the bigger picture.

Section 3: Full lesson plan and delivery

3.6 Plenary (10 mins)

Micro-presentations

Each group shares a 30–45 second summary:

- Pattern.
- Reason.
- Weakness.
- Suggested action.

Whole class reflection

Ask:

- *'What did we learn about our school?'*
- *'How can data help us make fair decisions?'*

Feedback

If time allows, use WWW/EBI *(please see below)* to give quick, balanced feedback on each group's idea.

- What Went Well (WWW):
  to highlight clear patterns, good use of numbers or fair actions.
- Even Better If (EBI):
  to encourage clarity, realistic actions or stronger reasoning.

Exit ticket (optional)

- *'One thing I learned...'*
- *'One question I still have...'*

Section 4: Teacher guidance

4.1 Differentiation strategies

- Use sentence starters if needed
  e.g. ***'The data suggests ....'***
  or ***'Explain what you think is going on....'***
- Provide icons or larger print for Additional Learning Needs.
- Offer extension work: e.g. compare with national data.
- Ensure every group has access to printed charts so learners without digital access are not disadvantaged.

4.2 Assessment guidance

- Accurate use of numbers.
- Clear comparison.
- Fair, neutral language.
- One limitation named.

Check that learners use their school-level data rather than assuming individual behaviour.

4.3 Assessment for learning (AFl) tools

- Thumbs 0–1–2.
- Quick chart reading check (axes, labels, years).
- 3–2–1 Frame.
- Good/Better/Best criteria.

4.4 Using the 3–2–1 analysis framework

To support learners in making sense of their data, introduce the 3–2–1 Analysis Frame. 3 sentences:

- What the data shows (including numbers).
- 2 reasons: Possible causes for the pattern.
- 1 limitation: Something the data doesn't tell us.

Ask learners to use the 3–2–1 frame before writing their proposal.

Section 4: Teacher guidance

4.5 Good/Better/Best Success criteria

Use this **Good/Better/Best** success criteria to help learners judge the quality of their interpretation:

Success criteria		
Good	**Better**	**Best**
Identifies a pattern and states one number	**Compares groups/times with two numbers; names one limitation**	**Uses precise labels/scales; justifies graph choice; proposes a feasible, ethical action**

- **Good**: the learner can spot a pattern and correctly state at least one number.
- **Better**: the learner can compare two groups or two time points, using numbers, and can name one limitation.
- **Best**: the learner uses the correct labels, explains the pattern clearly, and suggests a fair, realistic action.

Teacher notes
Remind learners to show a pattern, use numbers, name a limitation, and include a fair action.

4.6 Common misconceptions

- Small percentage differences don't always mean real change.
- A pattern doesn't prove a cause.
- Charts show groups, not individuals.

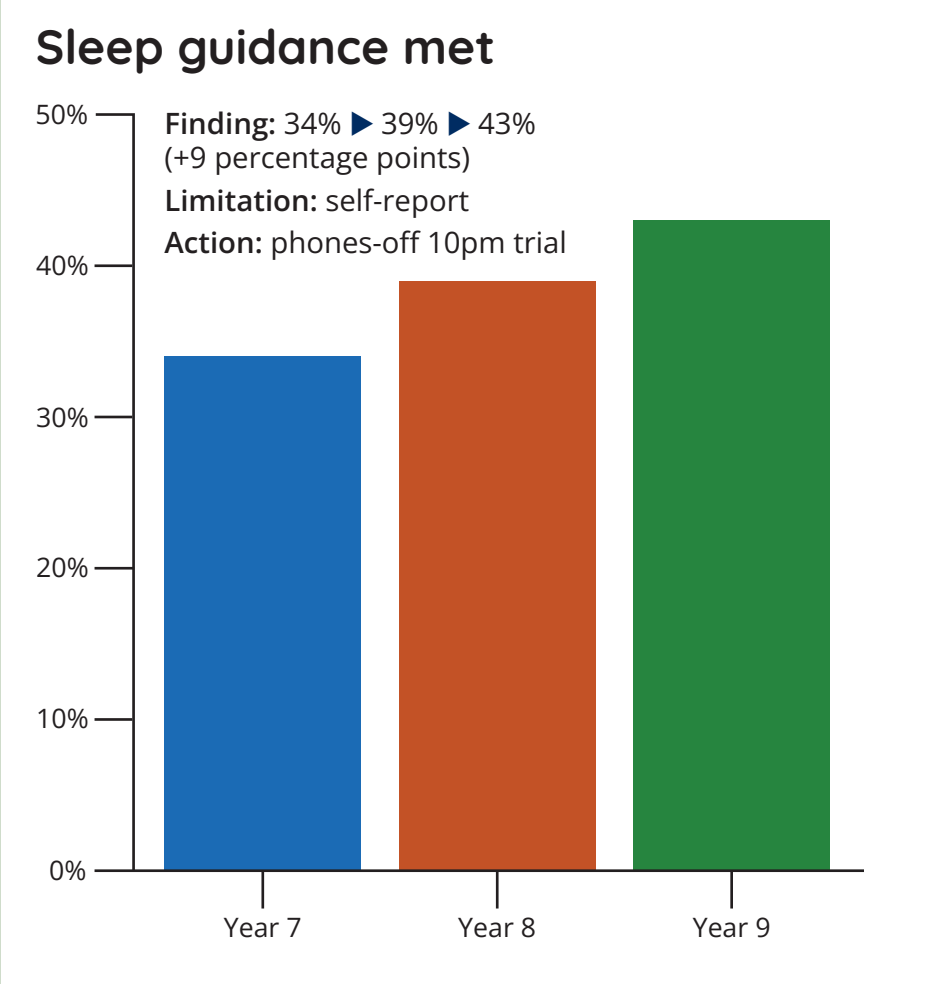
Section 4: Teacher guidance

4.7 Worked example: Sleep chart

Interpretation, weakness and action ideas

This worked example shows how to make sense of a sleep related chart and turn the findings into simple, realistic action ideas.

It models the kind of thinking we want learners to use i.e. noticing a pattern, explaining why it might be happening, recognising the limits of the data, and suggesting a small, fair change the school could make to support learners.



Section 4: Teacher guidance

What the chart shows

- 43% of Year 9 use screens at 11:30pm or later on school nights.
- This compares with 34% of Year 7.
- The pattern rises steadily from Year 7 ▶ Year 8 ▶ Year 9.

What this might mean

- Older learners may have later bedtimes, more independence, or more homework.
- They may also be chatting online more or managing more social pressures.
- These everyday habits could explain why screen use rises with age.

What the chart doesn't show us

- We don't know what learners were doing on their screens.
- We don't know whether it affected their sleep, mood or concentration in school.
- The chart only shows group patterns, not individuals.

Action ideas

- A short PSE based activity on wind down routines and digital habits.
- Teacher reminders about late-night notifications.
- Encourage learners to justify why their idea is small, realistic and fair.

Appendix 1: CPD guidance

Key tips

- Know your school's SHRN data.
- Model how to read a chart.
- Focus on reasoning, not perfection.
- Reinforce anonymity and group-level thinking.
- Use the scaffold (Spot ▶ Explain ▶ Weakness ▶ Action).
- Avoid using Generative-AI* to produce explanations, these can introduce bias or inaccuracies.

Reflection prompts

- Which activities generated the most discussion or engagement?
- Where did learners show strong reasoning or digital skills?
- How confident were groups in explaining patterns?
- What misconceptions appeared? How did you address them?
- Which scaffolds or prompts helped learners the most?

*Generative AI is AI that makes new content by learning from lots of existing information.

Safeguarding and inclusivity

- Ensure all learners feel included and adapt tasks for diverse needs.
- Be sensitive when discussing topics such as mental health, body image or behaviour.
- Follow school safeguarding protocols when using data and digital tools; avoid framing any group as 'the problem'.
- If learners begin to share personal experiences, pause and signpost to support, in line with school policy.

Responsible data use

- Focus discussions focused on patterns, not people, and avoid singled out groups.
- Remember that SHRN data is anonymised.
- Encourage quick fairness checks: 'Who might this affect?' 'Is this inclusive?'.
- Note simple mislimitations such as self-report, skipped questions, one year snapshots.
- Reinforce any personal disclosures that data helps us ask better questions, not make assumptions.

Appendix 2: Learner worksheets

You can download and print these worksheets for learners to place into their exercise books.

This allows learners to keep a record of their work.

Worksheet 1

Spot the patterns in your chart

1. **Look at the SHRN chart your group has been given. Write down one thing that stands out.**

What I noticed:

2. Why this might be happening?

My idea:

3. **Share with a partner and add something they noticed that you didn't.**

My partner noticed:

Appendix 2: Learner worksheets

Worksheet 2

3–2–1 Data scientist frame

Three sentences – What the data shows (using numbers)...

1.

2.

3.

Two reasons – Why this might be happening...

1.

2.

One thing that the chart data doesn't show us....

Appendix 2: Learner worksheets

Worksheet 3

Your proposal to the Headteacher

Group task

Work together to make sense of your SHRN chart.

Write a short proposal for the Headteacher about what the data suggests could be supported or improved at our school.

Write 4 to 5 sentences using pattern ▶ reason ▶ what the chart doesn't show ▶ one fair action using these steps:

Use the prompts below to guide your thinking:

1. Spot a pattern - What stands out in your chart?

2. Give one reason: Why might this be happening?

3. What doesn't the chart tell us?

4. Suggest one small, fair action: What could the school do? Is it fair for everyone?

5. Write your short proposal: 4 to 5 sentences explaining your idea for the Headteacher.

Appendix 2: Learner worksheets

Worksheet 4

12-Word data headline

Use this after your group's micro-presentation (optional plenary extension).

Create a punchy, news-style headline using EXACTLY 12 words.

Your headline should capture the most important message from your data.

Think: **What would grab someone's attention?**

My 12-word headline:

Appendix 2: Learner worksheets

Worksheet 5

A comparison between our school and the rest of Wales

If you finish your preparation early, you can complete this optional activity using the dashboard data.

1. What does our school's SHRN data show?
   (Use the percentage from your school chart)

2. What does the overall Wales average show?
   (Use the SHRN dashboard data)

3. What is the difference in percentage points?

Write a short comparison paragraph using the prompt below.

Remember:
Small differences often happen by chance, so avoid over claiming.

Our data shows..... %.

The Wales average is..... %.

The difference is..... percentage points.

This matters because...

Appendix 2: Learner worksheets

Worksheet 6

What I learned from the data

One thing I learned from the data is...	One question I still have is...

Appendix 2: Learner worksheets

Worksheet 7

Data ethics and privacy

What you need to know when working with SHRN data

- SHRN data is anonymised.
- We talk about patterns, not people.
- Fairness matters when making sense of data.

Careers spotlight

Where data skills can take you

Data skills aren't just used in school; they play a part in lots of jobs. When you learn how to read graphs, spot patterns and explain your thinking, you are practising skills used every day in the world of work.

Why STEM matters

STEM (Science, Technology, Engineering and Maths) helps you build:

- Problem solving skills.
- Teamwork.
- Testing and improving ideas.
- Confidence working with numbers.

These skills link directly to future courses, apprenticeships and careers - especially in science, health, digital technology and the environment.

Appendix 3: About SHRN

The School Health Research Network (SHRN) is a partnership between Cardiff University, Public Health Wales (including the Welsh Network of Health and Well-being Promoting Schools, WNHWPS) and Welsh Government. It helps schools improve learners' health and well-being using high-quality anonymised data.

Every two years, SHRN runs The SHRN Student Health and Well-being Survey with learners in secondary and primary schools across Wales. The survey covers a wide range of topics including health behaviours, well-being, relationships, school experiences and safety. Each school receives a school-level report designed to be easy to use across the school.

SHRN provides one of the most comprehensive sources of young people's health and well-being data in Wales, and forms part of routine school improvement planning. It includes 99% of secondary schools in Wales and achieving learner response rates of up to 75%.

SHRN data is widely used in Wales to support the Whole-School Approach to Mental Health and Well being and Curriculum for Wales delivery (e.g. Health and well-being, AoLE, data literacy, ethical inquiry).

Schools use their SHRN data to support:

- Whole-School Approach to mental health and well-being.
- School improvement planning.
- Curriculum for Wales (especially Health and Well-being and data literacy).

For this lesson, teachers only need their school level SHRN report and two or three selected charts relevant to Year 9.

To learn more about SHRN or request your school's report, contact shrn@cardiff.ac.uk or visit www.shrn.org.uk.

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