AUSTRALIAN DATA SCIENCE EDUCATION INSTITUTE

Measuring Mindfulness

There is a large range of apps, videos, and audio tracks that claim to help you to be more mindful. Many of them make wild claims about their effectiveness, but how do we know which ones actually work?

In this project you will track your emotions and ability to focus for a week, and then implement some kind of relaxation programme mindfulness or exercise. You'll continue to track your emotions and focus while you do the programme, and for a week afterwards, and see if you can detect any differences.

As a class, you'll compare your results, and the results of different programmes, and see if some programmes are more effective than others, and then devise an experiment that would be a more effective and valid test of the different programmes than this one.

Note: *Be aware that some students with trauma backgrounds may be uncomfortable with some parts of this lesson plan. It's important to emphasise that students do not have to share their ratings of their own wellbeing if they would rather not. In these cases students could focus on the change (or lack thereof) due to the mindfulness activity, rather than outright values. In this case zero on the graph could be "original value" and the change could be charted as difference from the original value.*

Year levels

Year 5 and 6

Curriculum Areas

CURRICULUM AREA	STRAND	SUB-STRAND
Science	Science Inquiry Skills	Questioning and Predicting Planning and Conducting Recording and Processing Analysing and Evaluating Communicating
Mathematics	Number and algebra	Number and Place Value
	Statistics and Probability	Data Representation and Interpretation
Digital Technologies	Data and Information	
English	Reading and Viewing Writing Speaking and Listening	Interpreting, analysing, evaluating Creating texts Interacting with others
General Capabilities:	Personal and Social Capabilities	Self awareness Self Management Social Awareness

Resources

- https://fuse.education.vic.gov.au/Resource/LandingPage?ObjectId=4047b1f3-be91-4ca2-96f8-2f7acb404b45
- Mindfulness Apps
- Videos
- Audio Recordings, or
- other mindfulness activities such as colouring books

Equipment needed

- Computer with word processing, publishing, spreadsheet software

Success Criteria

In this unit the student will improve their data literacy and data analysis skills by :
Knowing:

- What data is and how it is collected
- That data can help tell a story about the world around us and help us solve problems

Doing:

- Collecting data
- Applying basic mathematical skills to make sense of data
- Sharing the data story with others in different ways.

Understanding:

- What mindfulness is and how to measure its impact
- How to check your data for possible errors
- How data can be used to make comparisons and assessments

Step 1

- As a class, come up with a list of mindfulness or relaxation apps, videos, activities, or audio tracks that you have heard of or tried. If you haven't heard of any, do some online research to find some. Research the claims made by these programmes. What difference do they claim to make to your lives?

Step 2

- One thing mindfulness is often said to achieve is an improvement in mood, better sleep, and lowering of stress levels.

  As a class, **create a spreadsheet** that you can use to record your mood and stress levels twice a day for a week. Each person should have their own copy of this form, and no-one else needs to see it. Make sure your measures for mood and stress are numeric ranges, rather than words, as these will be MUCH easier to analyse later.

- You might use questions like these:

  - Rate your happiness on a scale of 1 (incredibly unhappy) to 5 (incredibly happy)
  - Rate your stress on a scale of 1 (incredibly stressed) to 5 (not stressed at all)
  - Rate your tiredness on a scale of 1 (incredibly tired) to 5 (not tired at all)

- As a class, discuss what each criteria looks like. Consider questions such as:

  - How do you know how stressed you are?
  - What kinds of feelings do you have when you're stressed?
  - What does being the most tired you can be, feel like? What is the opposite of that feeling?
  - What does a score of 5 in 'happiness' feel like?

Step 3

Using your own copy of the spreadsheet, use this to record your answers to the questions at the start and end of the school day every day for a week. This is week 1.

	Date	SCORE OUT OF 10					
		Happiness		Stress		Tiredness	
		AM	PM	AM	PM	AM	PM
Week 1	1/10						
	2/10						

- Make 3 sheets within the spreadsheet, each with the questions and days laid out. Label them week 1, week 2, and week 3.

Step 4

- Pick one of the mindfulness or relaxation apps, videos, activities, or audio recordings and commit to using it once per day for 7 days. As a class, split into 3 or 4 groups. Each group should use the same video, app, activity, or audio recording for the whole project.
- During these 7 days, answer the questions again at the start and finish of each school day in the week 2 sheet.
- As before, calculate the averages and find the highest and lowest values of these new answers.

Step 5

- Using the **AVERAGE** function, calculate and record your average result for each question for week 1.
- Record your **MAX** and **MIN** values for each question.

Step 6

- For one week after you finish your mindfulness or relaxation programme, answer the questions again at the start and finish of each school day in the week 3 sheet.
- As before, calculate the averages and find the highest and lowest values of these new answers.

Step 7

- Compare your averages from week 1, week 2, and week 3. Do any of the weeks look better in terms of happiness, stress, or sleep than any of the others?
- One of the problems with analysing data is that sometimes there are extra things going on that we can't factor into our analysis.
    - Were there things that happened during those weeks that might have affected your results? For example:
        - D*id something great happen that made you happier?*
        - *Did you have a really late night that might have made you more tired?*
        - *Did you have a problem that made you really stressed?*
        - *Did you get sick (which might affect all three questions!)*
    - What impact might these things have on your results?

Step 8

- Scientists sometimes have to come up with a new way of measuring things, when they haven't been measured before. We're going to come up with an "Impact Factor" for mindfulness and relaxation activities. The Impact Factor should measure how effective the activities are. We want to know what difference it makes to you to do mindfulness activities.
    - *How would you measure the impact of mindfulness on you?*
    - *What kinds of things do you think should be included in the Impact Factor?*

Step 9

- Compare your average question answers in week 1 to the averages for week 2. Our first version of the Impact Factor is just going to be the total difference across the 3 averages.
    - Subtract the Average for week 1 happiness from the average for week 2 happiness. This is the change in happiness from week 1 to week 2. Is it positive (meaning your happiness increased) or negative (meaning your happiness decreased)? Store this number.
    - Now do the same for stress, and for tiredness.
    - Add up the three numbers. This is your Impact Factor. Is it positive or negative?

AVERAGES	**WEEK 1**	**WEEK 2**	Δ	**WEEK 3**	Δ
HAPPINESS	*Avg 1*	*Avg 2*	*(Avg 2 - Avg1)*	*Avg 3*	*(Avg 3 - Avg 2)*
TIREDNESS					
STRESS					

Sample Table: Impact Factor Calculation and comparison

Step 10

- As a class, consider how well your Impact Factor reflects the individual changes for happiness, stress, and tiredness. Do any class members have negative changes for some but positive for others? Can you see that in the Impact Factor?
- Can you design a more effective Impact Factor?

Step 11

- Calculate the impact factor using week 1 and week 3, rather than week 2.
    - How different is it? Do you think the effects of using the programmes for a week can still be felt the week after?
    - What might be a more effective way to conduct this experiment?

Step 12

- For each group, add your Impact Factors together so that you can calculate the Impact Factor across the whole group, rather than one person.
- Calculate the average Impact Factor by dividing the total by the number of people in the group.
- How different is this group Impact Factor to the individual ones?

Step 13

- As a class, compare the group Impact Factors for each programme.
- Which programme looks the best using this measurement?
- How effective do you think the Impact Factor is at evaluating the programmes?
- What else do you think you should measure to really know whether the programmes work?
- How could you redesign this experiment to be a better test of the different programmes?
- How has this project affected the way you think about mindfulness and relaxation?

Curriculum Links

Curriculum Area: Strand: • **Sub-strands**	**Year 5**	**Year 6**
Science: Science Inquiry Skills: • Questioning and predicting	• With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be based on previous experiences or general rules	
Science: Science Inquiry Skills: • Planning and Conducting	• Decide which variables should be changed, measured and controlled in fair tests and accurately observe, measure and record data	
Science: Science Inquiry Skills: • Recording and Processing	• Construct and use a range of representations, including tables and graphs, to record, represent and describe observations, patterns or relationships in data	
Science: Science Inquiry Skills: • Evaluating	• Compare data with predictions and use as evidence in developing explanations	
Science: Science Inquiry Skills: • Communicating	• Communicate ideas and processes using evidence to develop explanations of events and phenomena and to identify simple cause-and-effect relationships	
Mathematics: Number and Algebra • Number and Place Value	• Use efficient mental and written strategies and apply appropriate digital technologies to solve problems	• Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers
Mathematics: Statistics and Probability • Data Representation and Interpretation	• Pose questions and collect categorical numerical data by observation or survey • Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies • Describe and interpret different data sets in context	• Construct, interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables • Pose and refine questions to collect categorical or numerical data by observation or survey
Digital Technologies: • Digital Technologies: Data and Information	• Plan, create and communicate ideas, information and online collaborative projects, applying agreed ethical, social and technical protocols.	

English: Reading and Viewing: ● Interpreting, analysing, evaluating - Yr 5 ● Expressing and developing ideas - Yr 6 Writing: Creating texts Speaking and Listening: Interacting with others	● Use comprehension strategies to analyse information, integrating and linking ideas from a variety of print and digital sources ● Use a range of software including word processing programs to construct, edit and publish written text, and select, edit and place visual, print and audio elements ● Understand how to move beyond making bare assertions and take account of differing perspectives and points of view	● Identify and explain how analytical images like figures, tables, diagrams, maps and graphs contribute to our understanding of verbal information in factual and persuasive texts ● Plan, draft and publish imaginative, informative and persuasive texts, choosing and experimenting with text structures, language features, images and digital resources appropriate to purpose and audience ● Participate and contribute to discussions, clarifying and interrogating ideas, developing and supporting arguments, sharing and evaluating information, experiences and opinions, and use interaction skills, varying conventions of spoken interactions according to group size, formality of interaction and needs and expertise of the audience
General Capabilities: Personal and Social Capabilities : ● Self awareness	● This element involves students developing an awareness of their own emotional states, needs and perspectives.	
General Capabilities: Personal and Social Capabilities ● Self Management:	● This element involves students developing the metacognitive skill of learning when and how to use particular strategies to manage themselves in a range of situations.	
General Capabilities: Personal and Social Capabilities: ● Social Awareness	● This element involves students recognising others' feelings and knowing how and when to assist others.	