Session 9
Giving a Three-minute Thesis Presentation

Learning Outcomes:

By the end of this session, students should be able to:

- use word stress and intonation to convey meaning effectively in academic presentations
- design, use and explain visuals effectively in academic presentations
- give a three-minute thesis presentation highlighting the significance of their research

Task 1

Watch the following video from 0:00-1:45 to see why stress and intonation are so important. https://www.youtube.com/watch?v=9nYpA2UgV0s

While watching the video, take notes for the following questions:

1. What is stress? What is intonation?

2. Which words in a sentence are often stressed?

3. What is the most important thing in achieving good intonation?

4. Without proper stress and intonation when you talk, how will your listeners feel?

Task 2

Watch the first two minutes of the following presentation video. How do you think the speaker has used stress and intonation effectively to convey meaning?

Hany Farid: How to spot fake AI photos | TED Talk

1. Identify some examples of stressed words in the talk.

2. Why do you think the speaker stresses these words? What characteristics do these words share?

3. In what ways do stress and intonation enhance the meaning conveyed during the talk?

Giving a Three-Minute-Thesis Presentation

In a Three-Minute Thesis (3MT) presentation, effectively communicating your research story is essential for engaging your audience and conveying the significance of your work. This skill involves **distilling complex ideas into clear, concise narratives that highlight key findings and their implications.** Postgraduates must learn to **structure their presentations logically, employing skills such as creating a strong opening hook to capture attention, using vivid language and relatable examples to clarify concepts, and incorporating visual aids to enhance understanding**. Additionally, **mastering body language and vocal variety** can help maintain audience interest. By honing these skills, researchers can make their presentations more compelling and accessible, ultimately inspiring interest and dialogue around their work.

Task 3

Watch a three-minute thesis video from the Graduate School, Stony Brook University: **SBU Three Minute Thesis 2019: Olivia Swanson, 1st Place - YouTube**

Use the following questions to help you analyze the video:

1. How does the speaker **organize** the talk (read the transcript on the next page)? What are the key moves?

2. What strategies does the speaker use to **explain abstract or technical concepts**?

3. What do you notice about the **body language** used by the speaker?

4. What do you notice about the **style/tone** of a 3MT presentation?

5. What do you think about the **delivery skills** of the speaker? What makes her a successful speaker?

6. What **transitional/signal phrases** are used to connect ideas? Are they natural and economic (time-saving)?

SBU Three Minute Thesis 2019: Olivia Swanson, 1st Place - YouTube

Brain in Motion

There's so many things that we take for granted each day. **Let's consider** a simple sip of that essential morning coffee as your hand reaches for the mug and brings it to your mouth, **you**'re not considering all the muscle contractions that allow **you** to do this, nor do **you** notice that while you drink your coffee, the rest of your body is remaining still behind the scenes. **Our** brains are working really hard to make sure this all goes smoothly. *But what if, day by day, our brains were no longer able to direct us in our intended movements, and instead started signaling our bodies to move in all sorts of unintended ways?* This is the reality for many people with Parkinson's disease.

Parkinson's disease causes symptoms like uncontrollable shaking hands, difficulty walking and speaking and constantly clenched muscles. **And what scientists know is that** the cause of Parkinson's Disease is a loss of a brain chemical called dopamine. And while we're pretty sure that dopamine helps brain cells communicate properly with one another. **How exactly it does this job across the brain is still unclear. So that's where people like me come in.**

I study Parkinson's disease in an area of the brain called the motor cortex. So why is the motor cortex special? Well, for any given movement like grasping that coffee mug, it requires coordinated communication across many brain areas, but the motor cortex is the last of these brain areas to receive the so called Move signal before it leaves **your** brain and travels to the rest of your body. **You can think of** the motor cortex as a metaphorical funnel in this way. Iit needs to allow just the right balance of move signals through. **So my goal is to** understand how dopamine plays a role in this communication within the motor cortex.

So the way I study this is in a simulated Parkinson's disease in a mouse, and in this way, **I'm able to look at** the brain at a much higher level of detail than **I would be able to** in an actual Parkinson's patient. **My work involves** listening in on the communications of brain cells in the motor cortex. I listen to the move signals they receive and how they respond.

And what my results have shown is that dopamine acts as the neck of this metaphorical funnel. It can completely control how a cell in the motor cortex responds, the magnitude of its response. And furthermore, when a brain is depleted of dopamine, suddenly the neck widens and more mood signals are allowed through, and we find that more signals are leaving the motor cortex, which might be contributing to those uncontrollable symptoms that I mentioned earlier.

So the next step would be finding a way to correct for this improper communication before real problems start to occur. **So my hope is that my work** is a piece of the larger puzzle of this disorder,

and with each advancement in knowledge, we're able to better support those with Parkinson's disease and work towards a cure. Thank you.

Task 4

Find a 3MT presentation video in your field of study (e.g., on YouTube or the University of Queensland's 3MT website: Three Minute Thesis - University of Queensland). Analyze the presentation using the guiding questions in Task 3.

Task 5

Now plan for your own 3MT presentation using the template below.

Opening - Hook	
Research Motivation	
Research Objectives	
Brief Mention of Research Methodology	
Key Findings/ Preliminary Findings/ Expected Outcomes	
Significance of the Research (i.e. originality), Applications of the Research Findings	

Practice the opening of your 3MT presentation with a partner. You may use ChatGPT to help you brainstorm ideas for ways to engage your audience or explain the scientific/technical concepts to the audience.

Task 6

Data visualization is the graphical representation of information and data. It is a commonly used technique for presenting research results in research writing and presentations. By using data visualization tools such as charts, tables, graphs, and maps, it will be easier for both technical and non-technical audiences to see and understand trends, outliers, and patterns in data.

Steps for explaining data visualization in an academic presentation:

1. Tell the audience what the visual is about
2. Guide the audience to read and understand the visual in a particular sequence according to your intended purpose
3. Highlight the significant aspects which are worth noting when interpreting the data
4. Explain the significance/meaning of the data (What do the data show?)

Useful phrases for explaining data visualization in an academic presentation:

Tell the audience what the visual is about	**Guide the audience to read and understand the visual in a particular sequence according to your intended purpose**	**Highlight the significant aspects which are worth noting when interpreting the data**	**Explain the significance/meaning of the data**
• Let's look at this bar graph which shows… • Let's turn to this diagram which presents… • If you look at this line chart, you will notice… • To illustrate my point, let's look at some charts… • Here we can see…	• The vertical axis shows… • The horizontal axis represents… • This curve illustrates… • The solid line shows… • The shaded area represents… • This colored segment is for… • The table below… • Above the table, you can see…	• It is worth noting that there was a rapid increase in… • I'd like to draw your attention to… • As you can see, there was a sudden drop in… • It's interesting that… • Take a look at this part of the diagram…	• XXX clearly shows…, meaning that… • The data show that… • Overall, the data show a strong positive correlation between… • Overall, the data provide evidence to support the argument that…

Below is an example of good data visualization and the explanation of the visual.

Source of the visual: https://www.visualcapitalist.com/the-50-most-visited-websites-in-the-world/

An example showing how the visual can be explained to the audience in a presentation:

[Step 1] Let's turn to this diagram which shows the world's most popular websites as of November 2020. **[Step 2]** The bar chart at the top left shows a breakdown of websites by categories. Here you can see the global rank of the website at the top of the circle, and the circle size is based on monthly traffic volume. **[Step 3]** It is clear that Google, YouTube and Facebook are the top three most visited websites. What's more, as the pandemic transformed the way we work, learn, communicate and shop, a majority of these activities migrated online. For example, it is not surprising that Zoom has grown explosively, with its number of monthly visitors surpassing Netflix, LinkedIn and Reddit. **[Step 4]** Overall, the data provide evidence to support the argument that social media and news have become part of everyday life of a majority of people worldwide. The data presented gives insight into the industries in which these sites operate and the traffic they attract.

Practice

Refer to a journal article in your discipline which includes data visualization. Imagine that you need to explain one of the visuals in the journal article to a group of both technical and non-technical audience in an academic presentation.

- How would you start your explanation?
- How would you guide your audience to understand the data?
- What information will you highlight to the audience?
- How would you explain the significance/meaning of the data?

Follow the steps of explaining data visualization introduced above. Practise explaining the visual to a partner.