



**SXPS288**  
22J

Remote experiments in physics  
and space

0% ?



## Learning Logs: Employability skills for remote experiments

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**Arabella Nock**      Careers and employability, STEM

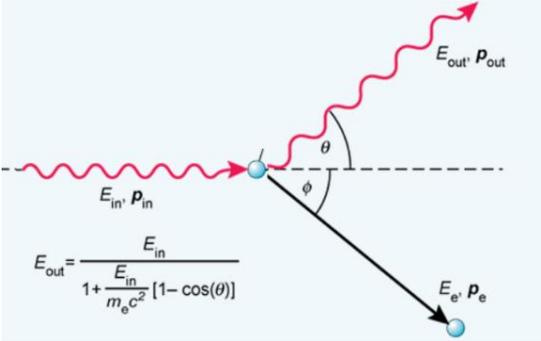
**Stella Bradbury, Mark McJury**      AL consultants – data analysis

# SXPS288 projects

Astronomy



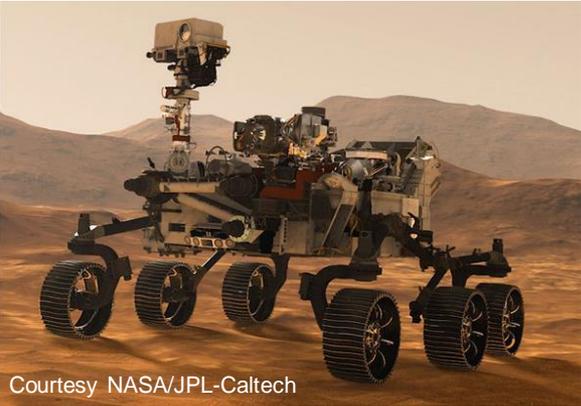
Physics (Compton)



Planetary science

Mars atmosphere

Mars surface







2019-11-03 15:41:27





## Initial activities: skills for experimental work

8–14 October

0 of 6  
completed



[Scientific communication](#)



[Experimental design and technique](#)



[Python for astronomy](#)



[Reviewing and evaluating your learning](#)



Python forum



OpenStudio Last upload: 2 December 22, 11:51



[1 Scientific communication](#) ▾[2 Experimental design and technique](#) ▾[3 Programming in Python](#) ▾[4 Reviewing and evaluating your learning](#) ▲[4.1 The progress tracker](#)[4.2 Introducing Learning logs](#)[4.3 How to use Learning logs](#)[4.4 Make your first Learning log entry](#)[References](#)[View as single page](#)

## 4.3 How to use Learning logs



Learning logs work in a very similar way to forum posts. If you have used module forums before, you should find it easy to get started working with your Learning log.

You will find the link to your Learning log on the SXPS288 Resources page. Remember that the log is personal to you – anything you post will be visible only to you and your tutor.

Once opened, the front page of your log will show a button to add a new post.



Figure 4.1 Learning log new post button



**KS2 - Use computer programming and scripting to organise and process experimental data and to present results.**

Wednesday, 30 Nov 2022, 16:17

**Attachments:**

-  BokehTEST.ipynb
-  UsingBokeh.ipynb

**Relevance to work done so far**

Relevant to work done so far.

**SJ Comments**

Very relevant here. Learning how Python works, how the various packages can be implemented, and imagining ways in which this can assist in sorting data/results has been very helpful

**Progress**

Partial

**Evidence provided**

Evidence of Python Worksheets (This will be added to as and when I complete the ARROW work)

[Permalink](#)

[Edit](#)

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[Add your comment](#)

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TT

## Annotating altitude-temperature plot - shaded areas in matplotlib

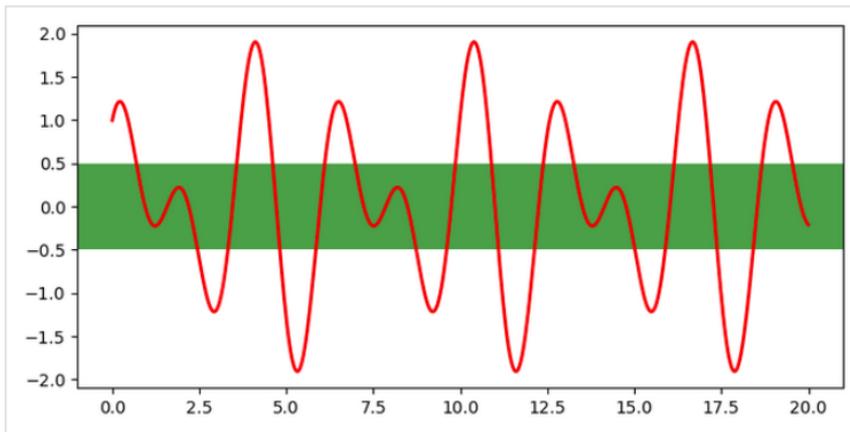
Tuesday, 4 Apr 2023, 11:37

For TMA03, Q2 I wanted to find a way to use Matplotlib to shade areas to replicate figures that resemble Figure 4.7 (which I think is neat).

## Example

```
import numpy as np
import matplotlib.pyplot as plt
plt.rcParams["figure.figsize"] = [7.00, 3.50]
plt.rcParams["figure.autolayout"] = True
x = np.linspace(0, 20, 500)
y = np.cos(3*x) + np.sin(2*x)
plt.plot(x, y, c='red', lw=2)
y1 = 0.5
y2 = -0.5
plt.axhspan(y1, y2, color='green', alpha=0.75, lw=0)
plt.show()
```

## Output





# Spectacular Spectroscopic Space Substance Scrutiny

Monday, 3 Apr 2023, 08:44

I was thrilled and deeply grateful to have been granted the opportunity to work with the Ptolemy instrument, developed for the Rosetta mission and flown on actual space missions. Conducting spectroscopy using this thermal valve was a wonderful experience that allowed me to hone my long-desired skill in this field. In particular, performing infrared spectroscopy with analogue atmospheres to identify different gases was a challenging and engaging puzzle that I thoroughly enjoyed. While simple, the physics behind infrared spectroscopy is truly remarkable, especially the fact that bond vibrations are quantized. This allows for the identification of specific gases or materials based on their absorption or emission spectra as energy goes into stretching or bending bonds (and is released as the bonds settle down).

Time	Time taken / Interval	Procedure	Operator	Reading	File name	Instructions	Notes
22:00 - 22:01	1	Status check	JW	n/a	n/a	Ensure calibration gradient is 2 and offset is 0	n/a
22:01 - 22:02	1	Weather check	JW	pressure 1000	n/a		
22:02 - 22:04	2	Vacuum reading 5.1 to 5.2	JW	n/a	n/a	1. The check will be the actual vacuum value for the experiment as shown in figure 2. It is critical that you ensure the correct value is used.	
22:04 - 22:05	2	Monitor vacuum pressure	JW	ADC pressure 40.0 mbar 545.0	n/a	2. Make sure you use the correct units.	
22:05 - 22:06	1	Set reading 5.2 to 5.3	JW	n/a	n/a	3. Check the correct file name is used.	
22:06 - 22:07	1	Monitor ADC pressure	JW	ADC pressure 40.0 mbar 5796.000	n/a	4. Check for correct file name.	
22:07 - 22:09	2	Monitor ADC pressure	JW	ADC pressure 40.0 mbar 5796.000	n/a	5. Check for correct file name.	
22:09 - 22:10	6	Aperture gradient and reference	JW and Lee	Gradient 0.19 Reference 104.83	n/a	6. Check for correct file name.	
22:10 - 22:11	3	Calibrate	JW	n/a	n/a	7. Check for correct file name.	
22:11 - 22:12	2	Pressure verification	JW	P at vacuum and 996.6	n/a	8. Check for correct file name.	
22:12 - 22:13	1	Preparation	JW	n/a	n/a	9. Check for correct file name.	
22:13 - 22:14	2	Evacuation	JW	n/a	n/a	10. Check for correct file name.	

Figure 3.1 Schematic showing the gas control valves V1 to V6 with the system being evacuated for the vacuum pump.

Figure 3.2 The Gas Cell Set 1  
Pressure sensor volume = 8.25 cm<sup>3</sup>  
Volume A = 8.22 cm<sup>3</sup>  
Volume B = 16.23 cm<sup>3</sup>



## Learning log

# Data collection and analysis

### Quantitative

- Website logs:  
participation, numbers of posts
- Power BI analytics:  
timings, links to assessment

### Qualitative

- Student feedback (SEAM):  
unstructured feedback
- JISC Survey:  
structured questionnaire

Separate groups (Tutor groups (SXPS288-22J)) Separate individuals 

## Participation - From Saturday, 1 Oct 2022 To Thursday, 13 Apr 2023

From      Enable

1299 Posts

24 Comments

To

     Enable

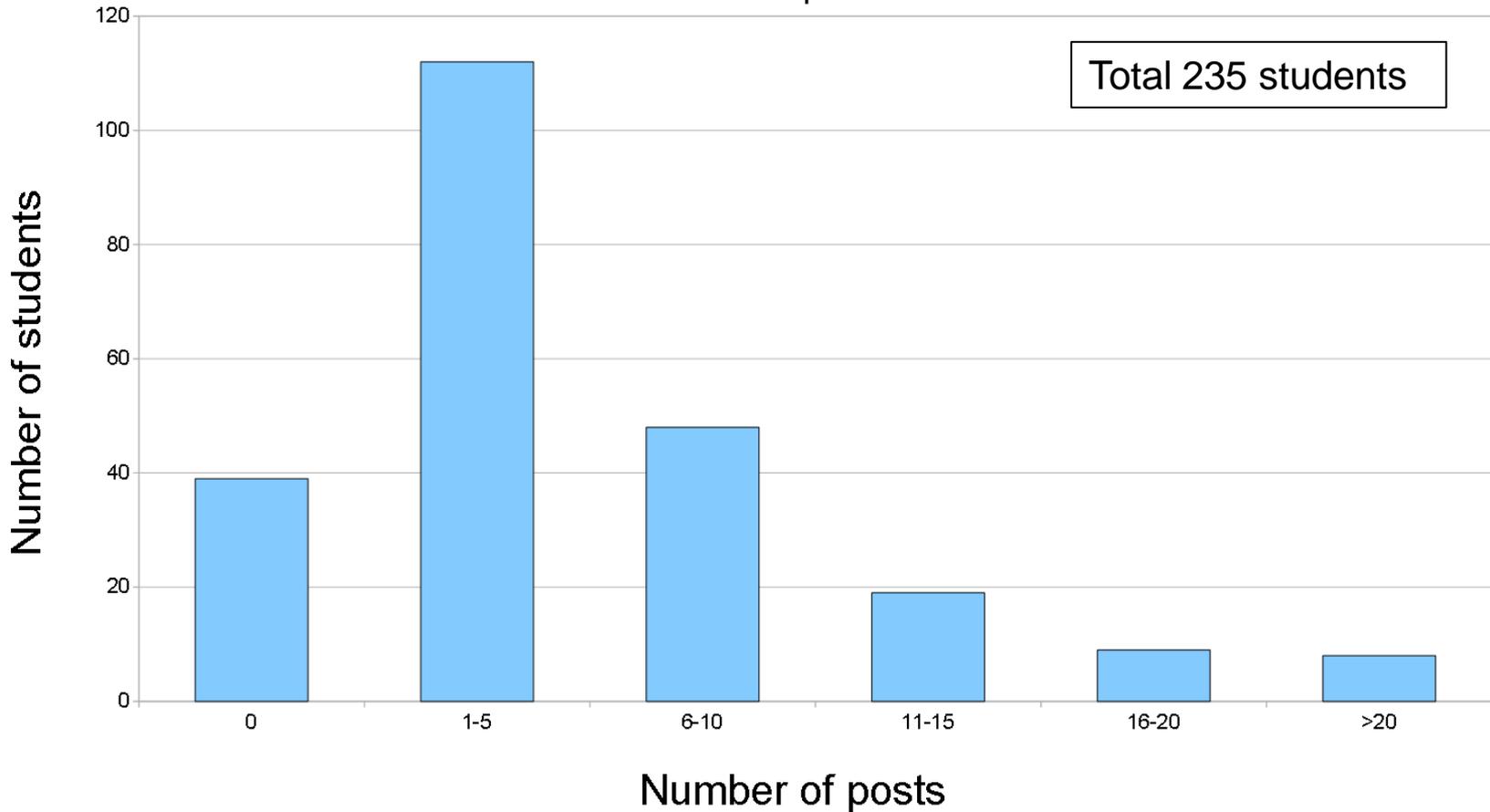
## 1299 Posts

Page [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) ... [26](#) [Next >](#)

User	Title	Date	Blog
 TT	<a href="#">Team work evidence from forum</a>	Wednesday, 12 Apr 2023, 20:42	<a href="#">[User]'s blog</a>
	<a href="#">Gas Cell Lab-Notes; Calibration &amp; CO2 Test Spectra</a>	Wednesday, 12 Apr 2023, 13:42	<a href="#">[User]'s blog</a>

# SXPS288 Learning Log Participation 2022J

Oct 2022 - Apr 2023



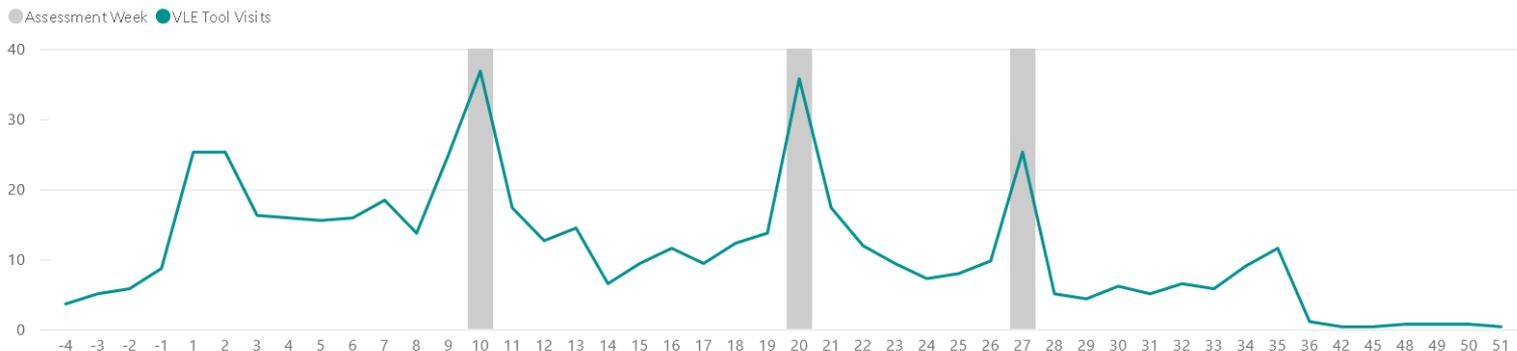
Tool Name: 
 Instance Name:

Module Code: SXPS288

SXPS288

Presentation Code

## VLE Tools Usage with assessment weeks

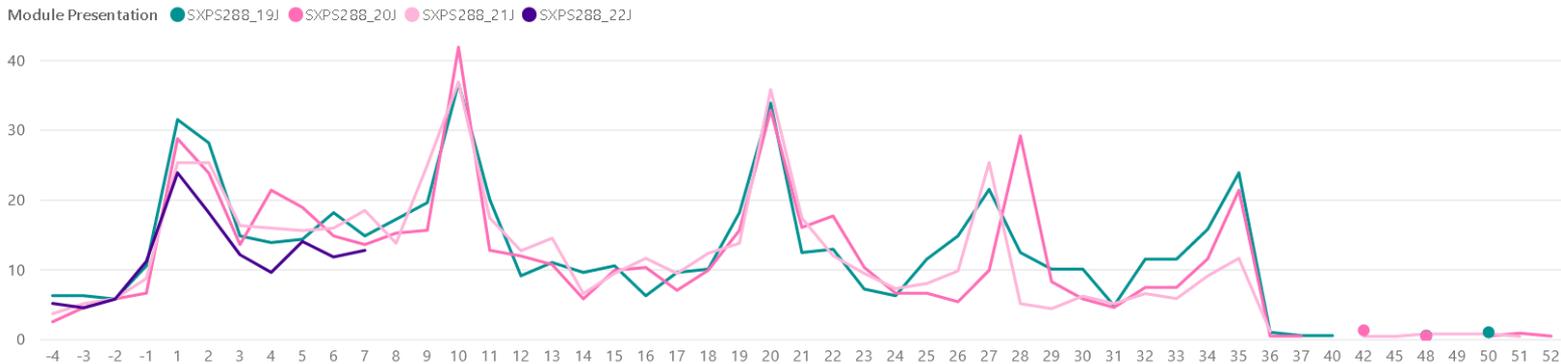


Presentation Code: Multip...

Select all

- 2019J
- 2020J
- 2021J
- 2022J

## VLE Tools Usage Comparator Graph



# SEAM Feedback – the good, the bad and the ugly !

The module [...] gave a clear picture of the skills I was developing and gave information about how to apply for placements. This is the most useful module for experimental science work and employability, I absolutely loved it!

I liked the videos that focused on what PhD students and OU staff were studying/researching

I was concerned about the module at a start due to poor communication skills in general but I genuinely feel as though I have learned a lot and also have developed my communication skills more than I could have hoped.

I enjoyed the task of keeping a personal development plan and I also was very happy with learning about employment prospects and the need to supply evidence. Very useful. Thank you.

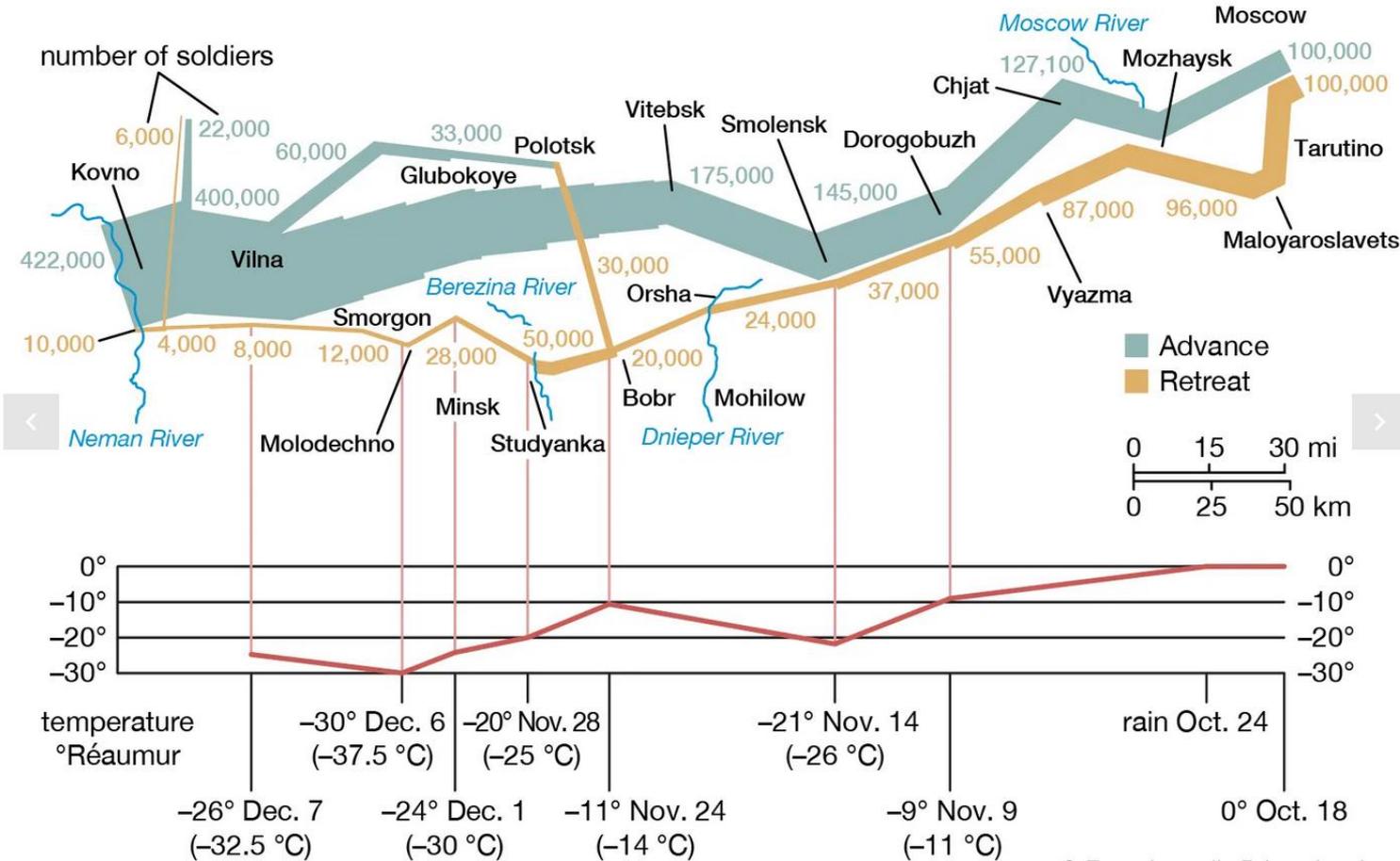
the amount of time wasted on introspective posts to a journal that I felt no benefit for using.

incredibly tedious questions regarding development which I would come to dread every time an assignment rolled around.

this module seemed [...] to cover excessively non-topic areas/life-skills that I didnt feel particularly relevant to me as someone who is retired and with no intention of re-joining the workforce.

statistical map of Napoleon's Russian campaign of 1812

Based on Charles Minard's graph of Napoleon's Russian campaign of 1812.

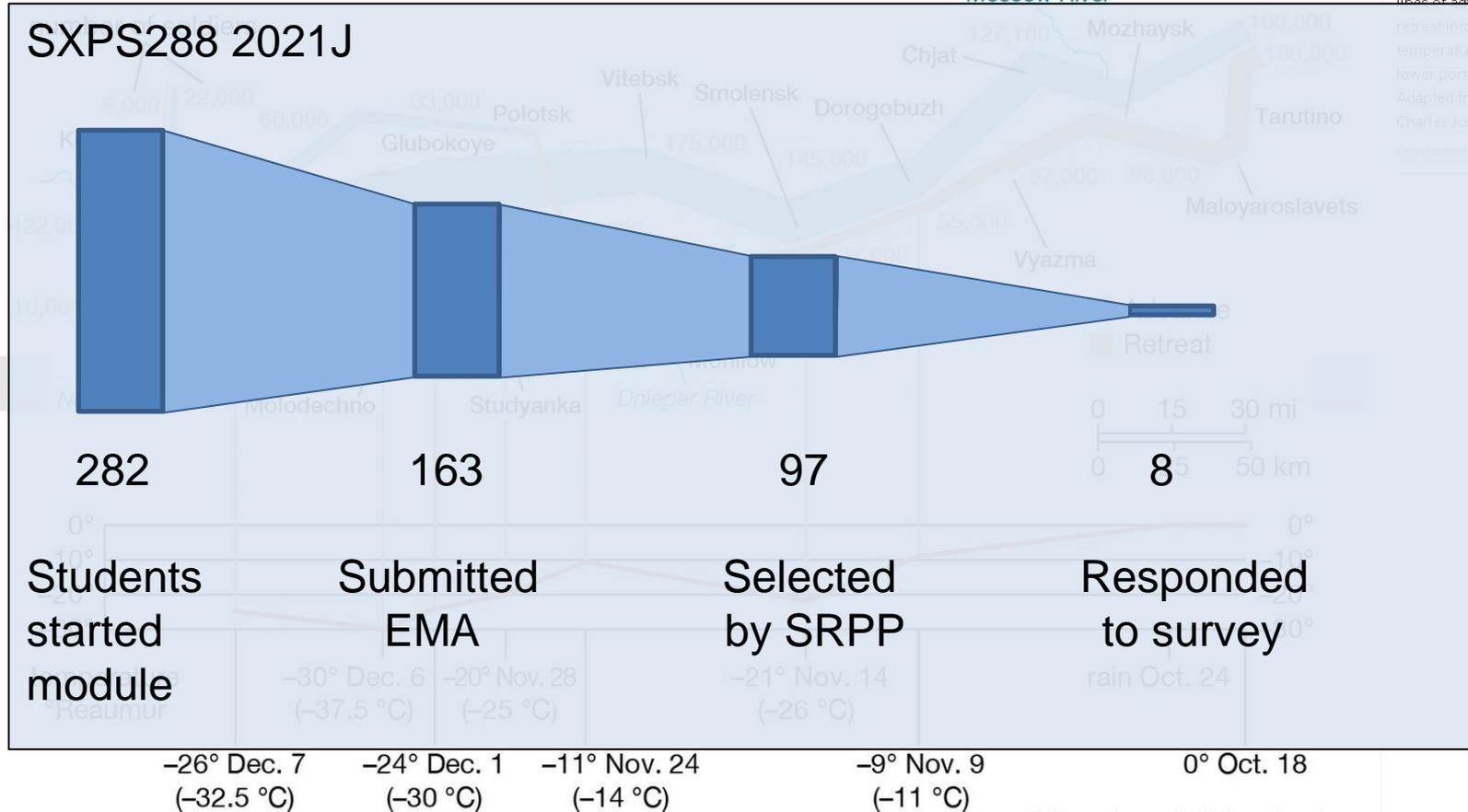


The size of Napoleon's army during the Russian campaign of 1812 is shown by the dwindling width of the lines of advance and retreat. The retreat information is correlated with a temperature scale shown along the lower portion of the statistical map. Adapted from a map published by Charles Joseph Minard in 1869.

Encyclopædia Britannica, Inc.

The size of Napoleon's army during the Russian campaign of 1812 is shown by the dwindling width of the lines of advance and retreat. The retreat information is correlated with a temperature scale shown along the lower portion of the statistical map. Adapted from a map published by Charles Joseph Minard in 1869.

Based on Charles Minard's graph of Napoleon's Russian campaign of 1812.



## SXPS288\_LearningLog\_2021J

Showing 8 of 8 responses

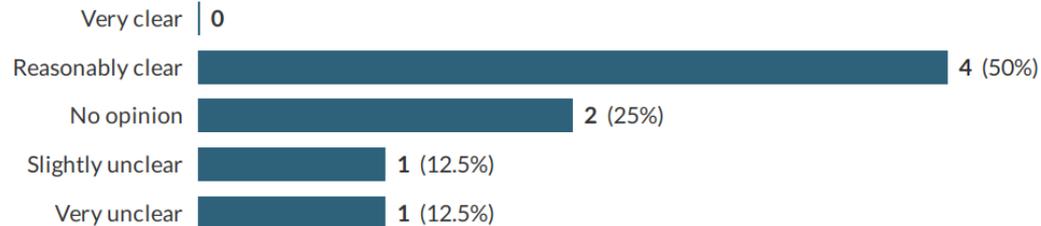
Showing **all** responses

Showing **all** questions

Response rate: 8%

## Questions about your initial impression of Learning Logs at the start of the course:

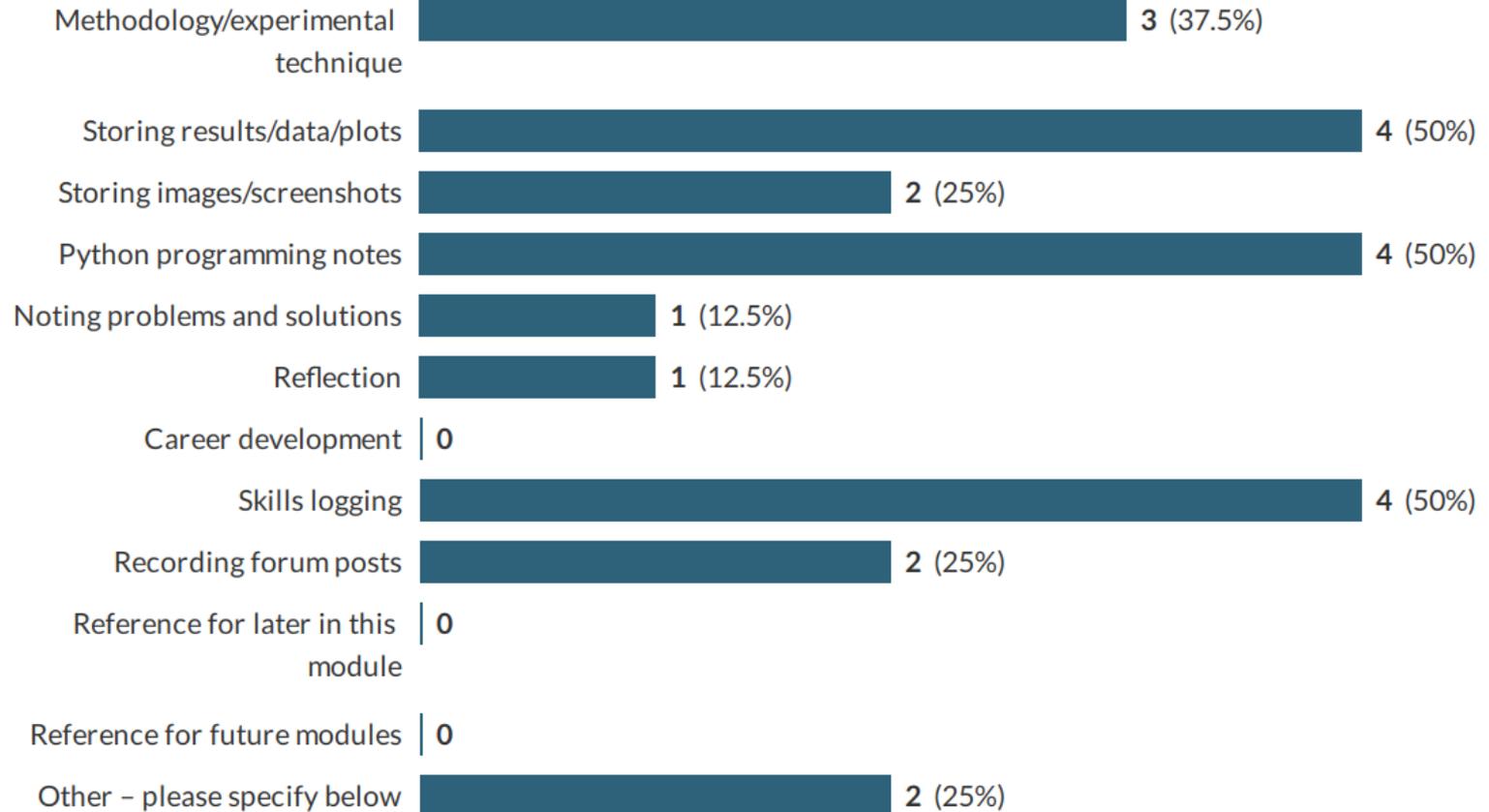
- 1 Did you think the purpose of the Learning Log (e.g. how and when to use it) was made clear in the module materials ?



2 If you felt its purpose was not clear, could you suggest any ways this could be improved ?

Showing all 4 responses	
More and better examples of their usefulness	827840-827831-89961651
At the very beginning it was said I may have an access to it anytime even after finishing the module. I think the same Log was in SM123. But I haven't seen it since finishing the module. I was wondering how it would be passed through the other modules.	827840-827831-90048100
The learning logs should be completed by tutors or expert educators, not undergraduate students. The learning logs have no bearing on the students actual learning and actually detract from the time and attention a student has to learn the course materials.	827840-827831-96045830
exercises as examples	827840-827831-96096941

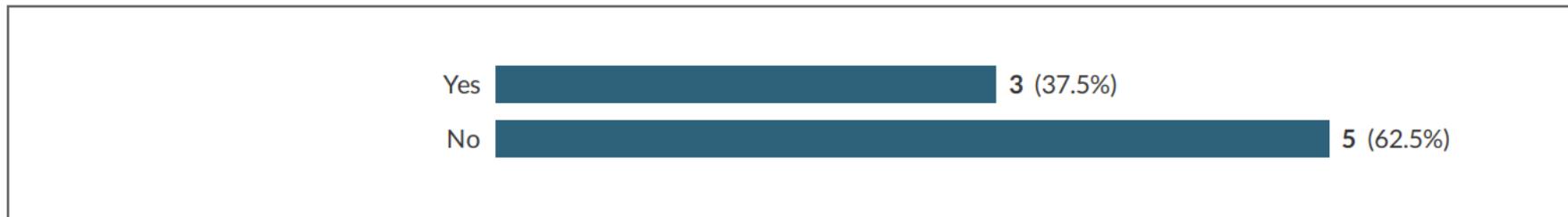
6 How did you use Learning Logs ? Please select all that apply



10.a If you think the Learning logs were useful, can you briefly explain which aspect or aspects you found most useful ?

Showing all 3 responses	
I can understand the reasoning for evidencing via the learning log, as it makes the notes easily accessible for both student and tutor... but as it really only gets used as part of a TMA, it feels like just an extra step, considering most notes very rarely require edits before submitting.	827840-827831-89960929
I like the idea of using them to log results and to track/demonstrate learning outcomes. I think it could be improved by linking it to other modules - to use and refer to much like an artist portfolio. I find it much better, and more personal, than the FutureYou tool I have encountered on other modules.	827840-827831-90046847
At the moment I am not sure. But the concept is good and if the time allows I wish to post there not only useful things for the TMA but some other notes and findings. I do such thing with my Facebook page. I treat it as my notebook. I can post things only for myself and nobody else has access. I wish logging into Learning Logs could be as simple as to the Facebook page.	827840-827831-90048100

17 Have you used something similar to Learning Logs before ?



17.a If so, did it offer any helpful functionality which you feel is missing from the Learning Log tool in SXPS288 ?

Showing all 3 responses	
Linking between logs, full hypertext functionality, latex (or something close to it).	827840-827831-89960929
I have used the FutureYou tool, if that could be described as similar, which I do not favour. The only thing missing is cross-module access.	827840-827831-90046847
A hybrid of OpenStudio and learning logs would be really appealing.	
I think it was very similar or even the same in SM123	827840-827831-90048100

18

Is there anything else that you feel would improve the use of Learning Logs in SXPS288 ?

Showing all 5 responses	
<p>Make learning logs more like TiddlyWiki, each Tiddler would be an highly dynamic learning log, allowing more functionality. It gives an opportunity to learn extra skills in addition to the basic markup currently only used when making jupiter notebooks. Infact, just using those notebooks would be an improvement than basic text.</p>	<a href="#">827840-827831-89960929</a>
<p>I feel that the TMA tasks are a bit contrived. I see the benefit of evidencing learning - and personally I like to highlight work I have done well or where I have learnt something specific. Others may not feel a need to do this and so they may only post because there is a TMA task, which shouldn't be the only reason the learning log exists.</p> <p>I also really like the OpenStudio - if learning logs could be linked into OpenStudio and cross module (so one OS for all modules enrolled on, split into sections for each say) then that would be fantastic!</p> <p>It would be nice to have somewhere that you could record work from all modules in one place, and cross reference where modules link together/feed into each other in content.</p>	<a href="#">827840-827831-90046847</a>
<p>Maybe accessibility as a telephone app.</p> <p>As I mentioned It would be nice to paste there some pages that are related to study and are found on other Internet pages.</p>	<a href="#">827840-827831-90048100</a>
<p>The Learning Logs should be the responsibility of a paid staff member not a student. One of the main purposes of people attending higher education is to have expert educators do this kind of work for them, so they can give the student advice. Making the student take on responsibilities that should be performed by staff members comes across as a cynical way to save money for the OU.</p>	<a href="#">827840-827831-96045830</a>
<p>make it easier to edit</p>	<a href="#">827840-827831-96096941</a>



## Learning log

# Conclusions

Small population module – small sample size – low survey response (incentivise ?)

Conclusions qualitative rather than quantitative

Engagement >80 % – Links to achievement / assessment (cause <> effect) ?

Link with forum (non-) engagement ?

Some students unaware of capabilities (e.g. formatting, linking across modules)

Reinforce instructions with more examples

Clarify benefit to students not on career path

