

Student Feedback



Course: *Think Like A Scientist* October – November 2019

Instructor: Dr Phil Heron (heronphi@gmail.com)

Website: www.philheron.com/think-like-a-scientist

Overview of course:

From the 15th October until the 26th November, 14 students participated in *Think Like A Scientist*, a 7-week prison education course that teaches critical thinking and encourages independent thought. The students contributed to discussion on a different scientific topic each week, which included science of sleep, climate change, natural hazards, space missions, the universe, and artificial intelligence. Through dialogic teaching methods and guided by a critical thinking framework, the students provided a valuable contribution to the class by analysing current research and communicating opinions on the topic. The following is feedback from 12 of the students of the course.

Think Like A Scientist is funded by the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 749664 and a European Geoscience Union Outreach Award.

Has the course helped you in any way?

- It helped me understand more about the environment we live in and how to better understand what each person can do to help save the world we live in
- Yeah, during the course Phil recommended I read a book on sleep patterns. In doing so, I've conducted my own sleep experiment which has improved my sleeping times. This putting me in better stead to wake up in here every morning. It has really helped.
- Yes, it has made me think like a scientist and broaden my thoughts
- Yes, it allowed me to learn more about subjects I hadn't really touched upon
- It has helped my understanding of the importance of sleep and the wonders of space
- Helped me re-engage with science again
- Gave me a better understanding of geoscience, space missions, and robots/AI
- We discussed a wide range of scientific topics which improved my knowledge base which I hoped the course would do
- Gave me information about the world

Did the course meet your expectations?

- Yes, it was very interesting and kept me engrossed in each topic
- It exceeded my expectations. Every topic was exciting!

- Yes and beat them by a mile
- Yes, it was very informative
- Mostly yes
- Partly! I wish we went deeper into some topics
- The course met my expectations
- Yes, even though I didn't attend all the lessons I did enjoy the ones I did attend
- Yes, thanks
- NO! because I want more time
- It exceeded my expectations. Every topic was exciting!

What was the best part of the course?

- I enjoyed all the course, even learning about topics I was not clued up on
- The course itself was the best thing. The variety of topics were perfect!
- The best part of the course was about space and the universe
- There were no bad parts at all, Phil was excellent
- The best part of the course was the group interaction, it allowed everyone to express their views and discuss them
- The best part is the conversation
- Th best was on AI - very enjoyable
- The best part of the course was learning about space.
- Learning about the different subjects as a lot of it I didn't already know
- The tutor

What was the worst part of the course?

- The worst part of the course was that due to it being held in prison, some people will apply for just something to do. Which isn't necessarily a bad thing, it's just you'll always get some that want to be there just to get out of a cell, so will end up disrupting a class from time to time.
- The worst part is the length of the course - I wish it was much longer
- The worst part of the course was that sometimes it felt like we drifted off the topic when someone raised a point that relates but wasn't relevant to the point that was being made, making information difficult to digest.
- Only 7 weeks

Any additional feedback?

- The teacher kept the class engrossed in each topic with good discussions and took good feedback from each class
- I personally think the course isn't long enough. Plus, it should have been at least twice a week.

- Phil should continue to do things like this in the future. It brings positivity to such a negative place and I myself am more than grateful for him taking his time out to participate in such a project. Thank you.
- Phil was excellent and really kept us wanting more
- I found it enjoyable
- Suggestion: formation of a science book club, so that the students meet to discuss scientific articles and books
- Suggestion: a level 2 class as a follow up
- Thank you, Dr Phil
- Two days a week please
- The course was very interesting with excellent discussions and group chats.
- The teacher kept good control of the class and was very knowledgeable in all aspects of the science class.
- It gave me good insight into topics I was not very knowledgeable and learnt me things I only slightly understood
- It gave me a better understanding of how small we are in our place in the life cycle and universe
- Phil brought the right balance of seriousness and 'attempted' humour. Haha.
- Thanks for making me think even more like a scientist.
- Maybe next time a trip to the 'science and industry' museum would make the class even better! Haha
- Keep up the good work Phil
- More people need to experience this course
- After learning that the lessons that I did miss were very enjoyable I am sad that I missed them
- Thank you, Dr Phil
- I am now paranoid about my sleep
- Thank you for your time

Based on student feedback, the most enjoyable class was:

Week 5: The Universe (9 votes).

Based on student feedback, the least enjoyable class was:

Week 2: The Atmosphere (4 votes).

Feedback from an officer who witnessed one of the sessions:

Phil's sessions were both entertaining yet educational. He is to be commended on the level of engagement with the subject and the chaps! I would have liked to have seen more of the sessions. This was great for the men, different and very enjoyable.

N=12

Rate the statement as it relates to you:

	<i>Strongly Agree</i>	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
1. "The class increased my interest in science"	42%	50%	8%	--	--
2. "The instructor was knowledgeable of the subject being taught"	67%	33%	--	--	--
3. "The instructor was enthusiastic about the subject"	75%	25%	--	--	--
4. "The class has encouraged me to think for myself"	33%	17%	50%	--	--
5. "The instructor was clear in presenting the material"	58%	42%	--	--	--
6. "The instructor was receptive to questions and/or discussions during class"	75%	25%	--	--	--
7. "The course overall was interesting"	58%	42%	--	--	--
8. "I would take this course again"	75%	25%	--	--	--
9. "The after-class work was set at the right education level"	50%	42%	8%	--	--
10. "I learned a lot during the course"	42%	42%	17%	--	--
11. "I found this course too difficult"	--	8%	8%	50%	33%
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>	<i>Strongly Disagree</i>

Phil Heron (heronphi@gmail.com)

Think Like A Scientist



Course: *HMP Low Newton 2019*

Instructor: *Dr Phil Heron*

Think Like A Scientist was a science course taught at HMP Low Newton once a week for seven weeks between 22nd January and 5th March 2019. It was the first course of its kind to be taught in England. *Think Like A Scientist* is funded through European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No. 749664.

The course was centred around three main tenets of being a scientist: understanding, analysis, and communication. For the duration of the class, the students engaged in thinking like a scientist to learn about a topic, analyse the current research, and communicate their findings.

In a world where 'fake news' is a real danger, the course offered students the basic building blocks required to think like a researcher, guided by the scientific method as a tool to gain understanding (e.g., what are we trying to find out? how do we test that? can we confirm a result? what else do we need to know to be sure of our findings?).

Each class lasted 2.5 hours and had the same basic framework: introduction to the main science topic; activities surrounding the main topic; assignment of main topic reading to be summarized and analysed; analytical skills best practices; and a section on improving communication skills. The topics covered were The Science of Sleep, Climate Change, Plate Tectonics, The Solar System, The Universe, and Robots/Artificial Intelligence. The last topic was delivered by Prof Danielle George MBE.

During the course, the students collected data for their own experiment ('Does the amount of sleep you get impact mood and/or energy levels?'). The students were required to understand and analyse the data and to communicate the findings in a report.

In the final week, the students taught the class. Each student educated the room on an assigned scientist that may be chosen for the Bank of England's #ThinkScience campaign to choose the new face of the £50 note. As a group, we voted for Alan Turing.

For completion of the course, the student attended ~18 hours of class, wrote 6 assignments and taught the class for 10+ minutes in the final project. I am happy to be contacted to discuss further the course and the teaching methods (student feedback below).

Dr Phil Heron

philip.j.heron@durham.ac.uk

Marie Skłodowska-Curie Independent Fellow

Durham University

5th March 2019

Think Like A Scientist



Course: *HMP Low Newton 2019*

Instructor: *Dr Phil Heron (philip.j.heron@durham.ac.uk)*

Written feedback on course (from four students):

- My mind feels like it has expanded, and I no longer feel like that stupid kid that never holds their hand up and holds their breath when the teacher asks a question.
- It was an amazing opportunity - like a live TED video just for me each week.
- It gave me a better understanding of all the topics covered and re-awakened my curious side.
- I am gaining a sense of confidence academically I never thought I had in me. That I do have a view and ideas and a thirst for knowledge - this course has ignited that.
- The course has given me more confidence and made me understand and see the world and universe around me in a different light.
- I never got to go to college or university the way I planned when I was younger - this gave me a tick on the bucket list and for a few hours I felt like I lived a dream.
- The way the course was delivered was exceptional and made easy to understand.
- At school I hated science but each week I couldn't wait until Tuesday to learn all these things I never knew.
- I enjoyed every single week even the ones I originally wasn't interested in.
- I would do all the weeks all over again.
- For the first time since college I enjoyed doing the homework.
- I really enjoyed all the coursework, but especially the Geoscience as I love volcanoes and earthquakes.
- I found the course exciting.
- I loved every second of it.
- I learned so much and I still want more.
- I will be so sad now it has finished.

Written feedback on instructor (from four students):

- The feedback I received each week was like receiving a prize - I've never felt like this and it means so much to me.
- I enjoyed all the weeks in the course, but I think it was the instructor and the way he taught and discussed the topics we did each week that made the sessions exciting.
- Thank you Phil for your energy and guidance and for teaching us and making us feel human.
- The guest speaker inspired me to write a story (I haven't yet but now have the bare bones for one).
- Phil is an amazing instructor who makes learning a fun experience, he explains things in a way you can understand and leaves you wanting to expand your knowledge.
- To be able to attend a class with a professor every week was incredible, let alone two when we had a guest speaker. It was AMAZING.

N=4

Rate the statement as it relates to you:

	<i>Strongly Agree</i>	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
1. "The instructor increased my interest in science"	100%	--	--	--	--
2. "The instructor was knowledgeable of the subject being taught"	100%	--	--	--	--
3. "The instructor was enthusiastic about the subject"	100%	--	--	--	--
4. "The instructor encouraged students to think for themselves"	100%	--	--	--	--
5. "The instructor was clear in presenting the material"	100%	--	--	--	--
6. "The instructor was receptive to questions and/or discussions during class"	100%	--	--	--	--
7. "The course overall was interesting"	100%	--	--	--	--
8. "I would take this course again"	100%	--	--	--	--
9. "The after-class work was set at the right education level"	75%	25%	--	--	--
10. "I learned a lot during the course"	100%	--	--	--	--
11. "The after-class work was useful"	75%	25%	--	--	--
	<i>Strongly Agree</i>	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>	<i>Strongly Disagree</i>

Phil Heron (philip.j.heron@durham.ac.uk)