

UNIT 10

Science and Ethics

I. Teaching Plan (4 Teaching Hours)

PART A 20Ms

PART B 70Ms

PART C 70Ms

PART D 40Ms

Procedures	Duration (mins)	Objectives	Key Points
Part A	20	To familiarize students with the topic of the unit, i.e. science and ethics in scientific research.	The benefits and harms resulted from the advancement of science and technology.
Part B Section 1	15	To offer a brief introduction of the top ten scientific discoveries in the UK.	Brief description of the top ten scientific discoveries in the UK
Part B Section 2	15	To offer a brief introduction of the first five British scientific geniuses.	1. Brief description of the first five British scientific geniuses; 2. Similarities and differences between the five scientists.
Part B Section 3	20	To introduce seven ethical principles raised by the UK Research Integrity Office.	Seven ethical principles that a researcher in the UK should comply with.
Part B Section 4	20	To teach students to judge a scientist from an ethical perspective.	1. The huge destructive potential of scientists; 2. Judging a scientist from an ethical perspective, using ethical principles learned from Section 3, Part B.

Procedures	Duration (mins)	Objectives	Key Points
Part C Section 1	15	To offer a brief introduction of the five great American scientific discoveries.	1. Brief description of the five great American scientific discoveries; 2. Connections between the great American and British scientific discoveries.
Part C Section 2	15	To offer a brief introduction of six famous American scientists.	1. Brief description of the six famous American scientific geniuses; 2. Providing brief description of some famous Chinese scientists.
Part C Section 3	20	To introduce 16 ethical principles adopted by various institutions in the US.	1. 16 ethical principles that a researcher in the US should comply with. 2. Comparison between the ethical principles in the US with those in the UK.
Part C Section 4	20	To help students to recognize and analyze ethical issues in academic works and research projects.	Recognizing and analyzing ethical issues in academic works and research projects, using the 16 principles learned from Section 3, Part C.
Part D Hands-on	Presentation In class 40	To help students to conduct ethical analysis of scientific research.	1. Writing a review; 2. Delivering a presentation.

II. Instructional Design

PART A LEAD IN	
LEAD IN	Tasks / Activities: Watching Videos, Answering Follow-up Questions
	Resources/ Equipment: Two Video Clips: 1. Top Inventions of All Time (2'30") 2. Man (3')

PART A LEAD IN	
LEAD IN	<p>Dos and Don'ts:</p> <ol style="list-style-type: none"> 1. The tutor should make sure that the students get the main points from the video clips. 2. The tutor should provide follow-up questions until the interest of the students in the topic is triggered. 3. The tutor should lead the students to thinking about the relation between science and ethics.
PART B FOCUS ON THE UK	
Section 1	Tasks / Activities: Reading, Summarizing, Rating
	Resources/ Equipment: The Textbook
	<p>Dos and Don'ts:</p> <p>The tutor should ask the students to think about and explain why a particular discovery is more or less important than another one.</p>
Section 2	Tasks / Activities: Reading, Summarizing, Debating
	Resources/ Equipment: The Textbook
	<p>Dos and Don'ts:</p> <p>The tutor should encourage the students to search on the Internet for more details concerning the five scientists.</p>
Section 3	Tasks / Activities: Reading, True or False Questions, Mini-case Analysis
	Resources / Equipment: The Textbook
	<p>Dos and Don'ts:</p> <ol style="list-style-type: none"> 1. The tutor should make sure that the students get a full understanding of the seven ethical principles. 2. For Exercise 2, the tutor should ask the students to provide enough details or evidence to support their decision.
Section 4	Tasks / Activities: Reading, Multiple Choice Questions, Making Comments
	Resources/ Equipment: The Textbook
	<p>Dos and Don'ts:</p> <ol style="list-style-type: none"> 1. The tutor should help students to go over Section 3, Part B. 2. The tutor should ask a few students to present their comments and encourage Q&A interaction between students. 3. The tutor should not provide the sample analysis until the very end of the interaction.

PART C FOCUS ON THE US	
Section 1	Tasks / Activities: Reading, Summarizing, Comparing
	Resources / Equipment: The Textbook
	Dos and Don'ts: The tutor should ask the students to explain how two or more discoveries are interconnected.
Section 2	Tasks / Activities: Reading, Summarizing, Information Searching
	Resources/ Equipment: The Textbook
	Dos and Don'ts: The tutor should encourage the students to use multiple sources to look for the information concerning famous Chinese scientists.
Section 3	Tasks / Activities: Comparing, Mini-case Analysis
	Resources / Equipment: The Textbook
	1. The tutor should make sure that the students get a full understanding of the 16 ethical principles. 2. The tutor should direct the students to notice that these principles may conflict with each other in certain circumstances, resulting in an ethical dilemma.
Section 4	Tasks / Activities: Skit Performing, Group Discussion
	Resources / Equipment: The Textbook
	Dos and Don'ts: 1. The tutor should ask the students to perform the skit instead of merely reading the lines of the characters. 2. The tutor should ask a few groups to present their analysis to the class and encourage Q&A interaction between groups.
PART D HANDS ON	
HANDS ON	Tasks / Activities: After-class Research Step 1: Choose one recent scientific or technological achievement/trend in your academic field. Find out the details of the achievement/trend in details and what can be done with the achievement/trend. Step 2: Collect different opinions on the achievement/trend. You are encouraged to refer to various sources such as the Internet, books, newspapers, TV programs, and movies.

PART D HANDS ON

HANDS
ON

Step 3:

Summarize and evaluate the opinions. Specifically, you need to think about whether the pros and cons raised by other people are fair and well justified.

Step 4:

Write a review of approximately 1,000 words based on your study. You also need to present your study to the class. Your presentation should last about 10 minutes.

Resources / Equipment: the Internet, Library, etc.

Dos and Don'ts:

1. The tutor should encourage different groups to pick up different topics.
2. The tutor should provide tips on giving a formal presentation for students.

III. Keys & References

PART A

Lead in

EXERCISE 1



Directions: Please watch the video clip “Top Inventions of All Time.” After watching, first fill in the blanks in the transcript of the video, and then discuss questions 1 to 3 in groups.

Top Inventions of All Time

Spencer Brown

For me the top ten best inventions of all time, in no particular order, are: electricity, the creation and distribution of it. Penicillin - without it half of us would be dead. The printing press, Guttenberg not only has enabled people to be literate, but he has really had global

implications in terms of how we communicate our information. The telephone I think is a phenomenal invention. airplanes and computing, the sonogram, which I know a lot of people don't realize, but the sonogram helps us to locate fish, oil and helps us monitor fetal development. That's a "biggie"; people don't realize that, that's the "sneaker". Cameras, digital in particular, I think are a phenomenal invention. Hydrogen fuel cell is phenomenal, and glasses for people to read. And the last one is iPod. Now there is one other invention that was done in 1810 that was done by Peter Durand, and it was the metal can. And I know people say oh, Campbell Soup, hello! That's just, that was invented in 1810. Up to that point it was impossible to preserve foods. But one guy figured out a way to can and preserve food. And when that happened you can see a direct correlation for supermarkets developing, and people not getting as sick. And food distribution became a very huge industry. Without cans we do not have supermarkets.

The top inventions mentioned by the speaker include:

electricity, penicillin, printing press, telephone, airplane, computer
sonogram, (digital)cameras, hydrogen fuel cell, glasses, iPod, metal can

1. Do you agree with Spencer Brown about the top inventions of all time?

Open.

2. If not, what are the top ten inventions of all time in your opinion?

Open.

Some great inventions or discoveries are listed below.

Date Invention or discovery

1-2 million years ago	Humans discover fire.
1000 BCE	Iron is widely used for making tools and weapons in many parts of the world.
105 CE	Ts'ai Lun makes the first paper in China.
700-900 CE	Chinese invent gunpowder and fireworks.
1000 CE ??	Chinese develop eyeglasses by fixing lenses to frames that fit onto people's faces.
1450	Johannes Gutenberg pioneers the modern printing press, using rearrangeable metal letters called movable type.
16th century	Antoni van Leeuwenhoek and Robert Hooke independently develop microscopes.
1609	Galileo Galilei builds a practical telescope and makes new astronomical discoveries.

1650s	Christiaan Huygens develops the pendulum clock.
1703	Gottfried Leibniz pioneers the binary number system now used in virtually all computers.
1800	Italian Alessandro Volta makes the first battery.
1814	George Stephenson builds the first practical steam locomotive.
1827	Joseph Niepce makes the first modern photograph.
1850s	Louis Pasteur develops pasteurization: a way of preserving food by heating it to kill off bacteria.
1861	Elisha Graves Otis invents the elevator with built-in safety brake.
1868	Christopher Latham Sholes invents the modern typewriter and QWERTY keyboard.
1876	Alexander Graham Bell patents the telephone, though the true ownership of the invention remains controversial even today.
1870s	Thomas Edison develops the phonograph, the first practical method of recording and playing back sound on metal foil.
1880	Thomas Edison patents the modern incandescent electric lamp.
1880s	Thomas Edison opens the world's first power plants.
1885	Karl Benz builds a gasoline-engined car.
1888	Nikola Tesla patents the alternating current (AC) electric induction motor and, in opposition to Thomas Edison, becomes a staunch advocate of AC power.
1890s	French brothers Joseph and Louis Lumiere invent movie projectors and open the first movie theater.
1895	German physicist Wilhelm Röntgen discovers X rays.
1901	Guglielmo Marconi sends radio-wave signals across the Atlantic Ocean from England to Canada

1903	Brothers Wilbur and Orville Wright build the first engine-powered airplane.
1907	Leo Baekeland develops Bakelite, the first popular synthetic plastic.
1908	American industrialist and engineer Henry Ford launches the Ford Model T, the world's first truly affordable car.
1920s	Philo T. Farnsworth invents modern electronic television.
1928	The electric refrigerator is invented.
1942	Enrico Fermi builds the first nuclear chain reactor.
1957	Soviet Union launch the Sputnik space satellite.
1969	World's first solar power station opened in France.
1973	Martin Cooper develops the first mobile phone.
1976	Steve Wozniak and Steve Jobs launch the Apple I: one of the world's first personal home computers
1981	Stung by Apple's success, IBM releases its own affordable personal computer (PC).
1989	Tim Berners-Lee invents the World Wide Web.
1997	Electronics companies agree to make Wi-Fi a worldwide standard for wireless Internet.
2001	Apple revolutionizes music listening by unveiling its iPod MP3 music player.
2001	The Wikipedia online encyclopedia is founded by Larry Sanger and Jimmy Wales.
2007	Amazon.com launches its Kindle electronic book (e-book) reader.
2007	Apple introduces a touchscreen cellphone called the iPhone.
2010	Apple releases its touchscreen tablet computer, the iPad.

3. Generally speaking, what are the impacts of these inventions on human beings?

Open. Students may raise various positive or negative impacts of these

inventions. One thing that is for sure is that these inventions have become one of the fundamental parts of the life and made life impossible to do anything without them.

EXERCISE 2



Directions: Please watch the video “Man,” and discuss the following questions in groups.

1. What does the video show?

The video shows a number of problems resulting from human activities.

2. How many problems can you identify? What are they?

Four major problems:

The killing of animals (for food, for clothes, and even for fun);

The destruction and pollution of the environment (cutting down trees, polluting air and water, producing huge piles of wastes);

The contamination of the food industry;

Irresponsible scientific exploration/research.

3. What do you think is the main reason of the problems?

Science and technology themselves do not tell people how to use them. The man, with his greed, cruelty and arrogance, is the one to blame. But Science and technology may become tools for destruction. The production and application of scientific knowledge must be guided by ethics.

PART B

Focus on the UK

Section 1

Discovery of DNA Voted Greatest UK Scientific Breakthrough of All Time

TEXT A

EXERCISE 1



Directions: Please complete the table below according to what you have learnt from Text A. Two examples are already done for you.

The top 10 scientific discoveries in the UK

Rank	Discovery	Description
1	DNA	James Watson and Francis Crick's discovery in 1953 of the double helix structure of DNA, the genetic code for all living things.
2	Genetic fingerprinting	Discovered by scientists at the University of Leicester in 1985, a reliable way to detect differences in individuals' DNA.
3	The first working computer	Two scientists at University of Manchester scientists, are credited with running the world's first stored program computer.
4	Contraceptive pill	Developed by Herchel Smith, a researcher at the University of Manchester, in 1961.
5	Cancer and cell division	In 1987 scientists for Cancer Research UK became the first to identify the key genes that govern and regulate cell cycle and division.

Rank	Discovery	Description
5	strained quantum well laser	A technology that allowed the internet, CDs and DVDs to be developed.
5	The Gaia hypothesis	The idea of the Earth as a self-regulating living organism.
8	Eradicating the tsetse fly	Scientists at the University of Greenwich eradicate the tsetse fly from Africa through the use of an artificial cow, which attracts the fly and kills it through insecticides.
9	Embryonic stem cells	Research by Martin Evans at the University of Cambridge led to the discovery of embryonic stem cells, which have the potential to grow into the different cells that make up the body.
9	Spherical molecules	Harry Kroto at the University of Sussex, and his US collaborators, revealed that carbon can exist as tiny spherical molecules.

EXERCISE 2



Directions: Work in groups of four or five. You shall assign different scores to the 10 scientific discoveries according to their importance in your opinion. Specifically, you should give 10 to the most important one, 9 to the second important one... and 1 to the least important one. Calculate the overall score of each discovery by adding up the score given by each group member and generate a new list of rankings. Report the results of your group to the class.

Open.

Section 2

Geniuses of Britain — The First Five




TEXT B

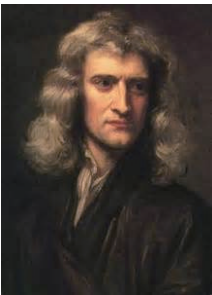

EXERCISE 1



Directions: Please complete the brief introduction of the five scientists using the information you have learned from Text B. An example is already done for you.

The First Five Geniuses of Britain

	Name: Christopher Wren
	Years: 20 October 1632 – 25 February 1723
	Fields: architecture, philosophy, anatomy, astronomy
	Most well-known/important for/as: The architect of the Royal Observatory; a founding member of the 'Invisible College' Group
	Name: Robert Boyle
	Years: 25 January 1627 – 31 December 1691
	Fields: Physics, chemistry
	Most well-known/important for: Boyle's Law, $PV = k$; the first modern chemist/founder of modern chemistry
	Name: Robert Hooke
	Years: 28 July 1635 – 3 March 1703
	Fields: Physics; chemistry, microbiology
	Most well-known/important for: <i>Micrographia</i> (compound microscope); the term "cells"; father of microbiology

	Name: Isaac Newton
	Years: 25 December 1642 – 20 March 1726/7
	Fields: physics; mathematics; astronomy
	Most well-known/important for: <i>Philosophiae Naturalis Principia Mathematica</i> (Newton's laws of motion; Newton's law of universal gravitation)
	Name: Edmund Halley
	Years: 8 November 1656 – 14 January 1742
	Fields: Astronomy; geophysics; mathematics;
	Most well-known/important for: Halley's Comet

EXERCISE 2



Directions: Please note down the two aspects in which Newton differs from Wren, Boyle and Hooke according to what you have learned from Text B.

1. Newton ***muttered*** his way around Cambridge when the other three were members of the Royal Society.
2. Newton believed in math ahead of observation whereas the other three were experimentalists.

EXERCISE 3



Directions: Work in groups to find out the connections between the five scientists. In addition to gathering information from Text B, you also need to search the Internet for more details concerning the five scientists. An example is already done for you.

Wren					
Boyle	In the Invisible College group and the Royal Society at the same time.				
Hooke	In the Royal Society at the same time; They were friends.	In the Royal Society at the same time; H was once assistant to B.			
Newton	In the Royal Society at the same time.		They disputed over credit for gravitation.		
Halley	In the Royal Society at the same time.	In the Royal Society at the same time.	In the Royal Society at the same time.	H urged N to write the <i>Principia</i> ; In the Royal Society at the same time.	
	Wren	Boyle	Hooke	Newton	Halley

Section 3

Code of Practice for Research in the UK

TEXT C

EXERCISE 1



Directions: Please decide whether the following statements are True (T), False (F).

1. A researcher can withhold data to guarantee that nobody can copy his/her work. (*F*)
2. A researcher must follow the requirements and guidance of any professional bodies in their field of research. (*T*)
3. A researcher can turn to specialists in relevant fields to help him/her in the research (*T*)
4. A researcher can cite from an unpublished paper without acknowledging the source. (*F*)
5. A researcher can never use human subjects to test the effect of his new drugs. (*F*)

EXERCISE 2



Directions: People have been debating over whether the “dignity, rights, safety and well-being of all involved in research” mentioned in the principle of “safety” should be extended to animals in research. Below are four major views on this issue. Discuss in groups which of them you agree with, and report the results of your group to the class.

- (a) The “anything goes” view
If humans see value in research involving animals, then it requires no further ethical justification.
- (b) The “on balance justification” view
Research involving animals is morally acceptable if the costs are outweighed by the benefits, but every reasonable step must be taken to reduce the harm to animals.
- (c) The “moral dilemma” view

Most forms of research involving animals pose moral dilemmas. Animal research is immoral, but refusing to use animals in research is avoiding scientific advancements that could be beneficial to humans or animals.

(d) The “abolitionist” view

There is no moral justification for any harmful research on animals. Humans experiment on animals not because it is right but because they can.

Open.

Section 4

Frankenstein’s Monster: An Experiment in Physiology and Ethics

►► TEXT D

EXERCISE 1



Directions: Choose the correct answer from the four choices marked A, B, C and D.
CBDDDB

EXERCISE 2



Directions: Please read the following summary of the story of Victor Frankenstein and his creature. Then write your comments on Frankenstein by organizing your answers to the following questions into a coherent whole.

Questions:

1. What did Frankenstein do?
2. Were the actions of Frankenstein ethical?
3. Which principles introduced in “Code of Practice for Research in the UK” (Text C, Part B) did Frankenstein break by each of his action?
4. What was the right thing or Frankenstein to do from the start?

5. What was the right thing for Frankenstein to do after he created the creature?
6. What was the right thing for Frankenstein to do when he was found by the creature at the summit?
7. Did Frankenstein deserve sympathy?

Below is a sample analysis of the case. It is by no way a standard answer. Students may have different opinions, especially concerning whether Frankenstein deserves sympathy and what are the right things for Frankenstein to do.

A sample

Frankenstein created a humanoid creature. Horrified by it, he disowned the creature as soon as it was created, and abandoned it to a miserable situation. Later, he promised to create a female equivalent to the creature upon its request. Yet he did not keep his promise for fear that he would create a race of monsters. The creature killed his little brother, best friend and bride for revenge. Frankenstein searched for the creature in the Arctic Circle, and eventually died from an accident. (Question 1)

Frankenstein transgressed several ethical rules (Question 2). First, driven by his ambition to unfold “the deepest mysteries of creation,” he did not think about his social responsibility as a scientist at all when he conducted his experiment. He did not care about the consequences that his research might bring. Neither did he think about the safety of his experiment. Second, after the creature was made, he was not open enough to announce the news and to alert people of the existence of the creature. Third, he broke the principle of “integrity” when he failed to keep his promise to the creature. (Question 3)

Frankenstein made wrong decisions at several crucial points. First, he should have been less arrogant and more cautious in the very beginning. If he had considered more of his social responsibility instead of his own ambition, he may have not designed the experiment (Question 4). Second, after the creation of the humanoid, he should have announced the results of his experiment and kept the creature to cultivate it, or done something else to make things better, rather than left him alone (Question 5). He still had the chance when the creature found him at the summit. He could have brought the creature back, teaching it, educating it, and befriending it (Question 6).

Frankenstein was a victim of his own experiment, as well as the creature. He deserved some sympathy, though sympathy cannot save him from the tragedy (Question 7).

PART C

Focus on the US

Section 1

Five Great American Discoveries in Science

TEXT E

EXERCISE 1



Directions: Please complete the table below according to what you have learned from Text E. An example is already done for you.

Five Great American Discoveries in Science

	Discovery	Year	Scientist(s)	Significance
1	electrical nature of lightning	the early 1750s	Benjamin Franklin	led to the invention of the lightning rod and batteries, represented the beginning of US science
2	discoveries in paleontology	from about 1870s	Othniel Charles Marsh	helped put US paleontologists on the map, resulting in the leadership of the US in paleontology
3	mapping of the first genes	the early 20th century	Thomas Morgan Hunt	pioneering the field of genetics by linking heredity with chromosomes
4	the Internet	beginning in the 1960s	American engineers and scientists	transformative in a way that nothing else, perhaps, has ever been
5	Moon landing	July 20, 1969	American engineers and scientists	one giant leap for mankind, representing an integration of technology with scientific discovery

EXERCISE 2



Directions: Please compare the five American scientific discoveries introduced in Text E with the ten British discoveries mentioned in Text A. Try to find out the connections between the discoveries.

1. The discovery of the double helix structure of DNA, genetic fingerprinting, the discovery of genes that govern and regulate cell cycle and division were made possible by the mapping of the first genes.
2. The Internet cannot exist without the invention of the first working computer.

Section 2

Famous American Scientists


TEXT F

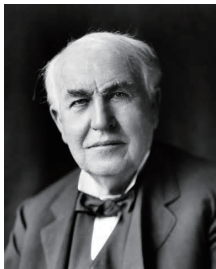




EXERCISE 1



Directions: Please complete the brief introduction of the six American scientists using the information you have learned from Text F. An example is already done for you.

The Six Famous American Scientists

	Name: Benjamin Franklin
	Years: January 17, 1706 – April 17, 1790
	Fields: Physics
	Main achievements: Invented bifocal lens, lightning rod, carriage odometer, Franklin Stove, and glass harmonica; discovered the principle of “conservation of charge.”



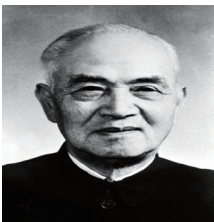
	Name: Thomas Edison
	Years: February 11, 1847 – October 18, 1931
	Fields: Physics
	Main achievements: Invented electric bulb, phonograph; set up a system for distribution of electricity.
	Name: George Washington Carver
	Years: 5 January 1864 – January 5, 1943
	Fields: Botany
	Main achievements: Taught farmers to make a variety of recipes from peanuts; improved the preparation of axle grease, adhesives, instant coffee, fuel briquettes, chili sauce, buttermilk, bleach, sidewalk, plastic, paper, metal polish.
	Name: Barbara McClintock
	Years: June 16, 1902 – September 2, 1992
	Fields: Physiology/Medicine
	Main achievements: Developed a technique to visualize the corn chromosomes; discovered the phenomenon of transposition.
	Name: Linus Pauling
	Years: February 28, 1901 – August 19, 1994
	Fields: Chemistry
	Main achievements: Pioneered the work in the field of molecular biology and quantum chemistry; won the Nobel Prize in two different fields.
	Name: Percy Julian
	Years: April 11, 1899 – April 19, 1975
	Fields: Chemistry
	Main achievements: Pioneered the work in the field of medicinal drugs synthesis from plants and the large-scale industrial production of hormones.

EXERCISE 2



Directions: Please collect information about two famous Chinese scientists and provide a brief introduction of them following the examples in Exercise 1.

Samples

	Name: Qian Xuesen/ Hsue-Shen Tsien
	Years: 11 December 1911 – 31 October 2009
	Fields: Aeronautics
	Main achievements: “Father of Chinese Rocketry”
	Name: Chen Jingrun
	Years: May 22, 1933 – March 19, 1996
	Fields: Mathematics
	Main achievements: Proved Chen’s theorem; made significant contributions to number theory
	Name: Li Siguang
	Years: 26 October 1889 – April 29, 1971
	Fields: geomechanics
	Main achievements: founder of China’s geomechanics

Section 3

How to Be an Ethical Scientist in the US?

► TEXT G

EXERCISE 1



Directions: Though they differ in number, the principles raised in Text C and Text G overlap to a large extent. Please work out the corresponding relationship between the two sets of principles by filling in the table below. An example is already done for you. Notice that one principle in Text C usually corresponds to more than one principle in Text G.

Principles in Text C	Principles in Text G
Excellence	Competence; Carefulness; Responsible Publication
Honesty	Honesty; Objectivity; Respect for Intellectual Property
Integrity	Integrity; Legality
Co-operation	Openness; Respect for colleagues
Accountability	Social Responsibility
Training and Skills	Responsible Mentoring
Safety	Animal Care; Human Subjects Protection

Please note that the principles of “confidentiality” and “non-discrimination” mentioned in text G are not stressed in Text C.

EXERCISE 2



Directions: Please decide whether the principle named in each of the following cases is broken.

1. Professor Manson was Jill's supervisor. When Jill did her undergraduate project, Professor Manson was extremely busy, so he asked a PhD student of his to help Jill. Did Professor Manson break the principle of “responsible mentoring”?

Yes, Professor Mansion broke the principle of “responsible mentoring.” It is his responsibility to provide supervision to Jill.

2. Professor Lakoff, entrusted by a company, created a database containing commercial secrets of the company. He told his friend about the database without revealing any crucial details. Did Professor Lakoff break the principle of “confidentiality”?

Yes, Professor Lakoff broke the principle of “confidentiality.” He should have not talked about the database at all.

3. Professor Turner did an experiment on the treatment of depression. He promised to tell the results to his subjects who were all suffering from depression and were eager to know the results. Later he was advised by several psychiatrists not to do so, as the results might depress the subjects more. So Professor Turner decided to take back his words. Did Professor Turner break the principle of “integrity”?

Open.

This situation involves what is called an ethical dilemma, in which to obey one ethical rule would result in transgressing another. Maybe Professor Turner should have known better in the very beginning and have been more careful in making promises.

Section 4 Tripped Up

► TEXT H

EXERCISE 1



Directions: Please work in groups to perform this skit. Each group should have five students, who will assume the roles of the five characters, i.e. the narrator, Dr. Greene, Ernest Lee, Perry Noya, and Gloria.

EXERCISE 2



Directions: Please analyze the skit following the steps below. First, comment on Dr. Greene and Professor Dr. Blitz from an ethical perspective. Pay full attention to the complexity here. You may refer to “How to be an ethical scientist” (Text G, Part C) to specify what rules or principles they break. Second, discuss in groups what you would do if you were Dr. Greene and what would you do if you were Ernie.

Comments on Dr. Greene:

Dr. Greene knew that submitting an abstract to the Experimental Biology meetings meant a lot to Ernie, yet she did not allow him to. In doing this, she may be accused of not providing responsible mentoring. But Dr. Greene’s decision might not be as unfair as it appeared to be. After all, Ernie cannot get a paper publication as well if the postdoc team of Professor Dr. Blitz scoops their work. Dr. Greene may also be accused of breaking the rule of “openness” and “integrity” in that she did not want others to know what they were doing and that she did not allow Ernie to give a poster presentation. However, these two accusations will not be true if eventually Dr. Greene has a paper published, with Ernie being her co-author.

Comments on Professor Dr. Blitz:

If what was said about him is true, then Professor Dr. Blitz did not respect intellectual property or his colleagues, though there could be no hard evidence that he had committed plagiarism. In addition, he did not comply with the rule “responsible publication”, as he published only for the sake of publication. Finally, he did not give “responsible mentoring” to his postdocs. He set a bad example and did not teach them the right thing.

What you would do if you were Dr. Greene:

Open.

Perhaps the right thing to do is talk more with Ernie, tell him more about the risks, and seek mutual understanding. If Ernie wants to submit a poster anyway, allow him to and let God decide what will happen.

What you would do if you were Ernie:

Open.

Maybe talk more with Dr. Greene and ask for her permission for submitting an abstract. If Dr. Greene does not give permission anyway, write up and submit a full paper as soon as possible.

PART D

Hands on

Directions: Work in groups. Each group is going to conduct a study to analyze controversies, especially ethical ones, over a recent scientific or technological achievement / trend of your academic field. Produce a report and deliver a presentation after your project is finished. You may follow the steps listed below. A sample review is provided for your reference.

Tips on how to give a presentation:

Part one: what to do and to say at each stage of a presentation.

1. Preparation

- a. Choose a topic that
 - interests you
 - you know something about
 - you have strong feelings about
 - appeals to your audience
 - you can research
- b. Decide your purpose of presentation
 - Persuade
 - Inform
 - Entertain
 - ...
- c. Research
 - Looking for useful resources
 - Encyclopedia
 - Books
 - Journals
 - The Internet
 - Using questionnaires, surveys, interviews, experiments, ...
- d. Write down your speech
 - Clear organization
 - Simple language
 - Short sentences

- f. Create PPT slides
- g. Rehearse

2. Presentation

Introduction
Structure
Signposting
Making yourself clear
Conclusions

3. Questions and answers

4. Additional tips on opening a presentation

Give statistic that relates to the audience.
Ask the audience a question.
Ask your audience to imagine a situation.
Say something personal about yourself.
Be mysterious.
Tell a story/joke.
Hold a strong/counterintuitive claim.

Part One: how to create PPT slides

1. Title page

Elements that must be given:
Title (try to be specific and descriptive)
Your name
Elements to be included sometimes:
The name of the date of the conference
The logo of your institute
Your supervisor
Sponsors
Acknowledgement
A photo
A background image

2. Editing your text

One idea per slide
Never too many words
Use complete sentences only for a specific purpose

- audience with a low level of English
- emphasis

3. Using bullets

All bullets = no bullets

Six bullets per slide at most (an exception: when bullets = lists)

Two level of bullets at most

Be grammatical

4. Using images

Color

- Should contrast with the background.
- Should not be distracting and annoying.
- Can be used for contrast or emphasis (see example 2).

Background

- Avoid backgrounds that are distracting or difficult to read.
- Be consistent, generally speaking.

Graphs

- Use graphs rather than just tables and words.
- Data easier to comprehend.
- Trends easier to visualize.
- Always title your graphs.

Pictures/photos

- Use pictures or photos.
- To interest your audience.
- To replace tedious text.
- Avoid “the sauce being better than the fish”!

IV. Online Reading Materials

PART A Focus on the UK

Section 1 Britain and the Rise of Science

Section 2 The Rivalry between Isaac Newton and Robert Hooke

Section 3 The Bad Science Scandal: How Fact-fabrication Is Damaging UK's Global Name for Research

Section 4 1997: Dolly the Sheep Is Cloned

PART B Science and Ethics in the US

Section 1 Technology: A Blessing and a Gift, or a Curse or Worse?

Section 2 Tesla Motors' Dirty Little Secret Is a Major Problem

Section 3 Two Cases of Ethical Controversy in the US

Section 4 Obama's Policy on Stem-Cell Research