iNTEGRITY

H2020

Short Teachers Guide for Secondary School Research Integrity Course

Empowerment

Drawing on the work of others

Collaboration and working together

Dealing with cheating and other un ethical behaviour

Collection, analysis and presentation of data

Consent and researching with vulnerable groups

Authorship of research and who should be credited

Ethical use of data

INTEGRITY

H2020

Short Teachers Guide for Secondary School Research Integrity Course

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“Research integrity means doing the right thing, and giving credit where credit is due”

Dr Dorian Karatzas

Head of the Sector for Ethics and Research Integrity, European Commission

01

Introduction

How to use this manual

This manual is intended to guide teachers when working through the modules which make up the INTEGRITY Project Research Integrity course. The full course consists of 9 modules, each of which has been designed to address the main research integrity issues of most relevance to secondary school students. Empowerment of the student for responsible research conduct is at the core of the INTEGRITY course and each of the modules.

The different modules present concrete situations representing different integrity challenges. It may sometimes be useful to know the formal terms for the different integrity issues, and this section gives a brief overview to terminology.

We suggest you work through the modules in the order presented and that you are guided by the module timeline for each module. We also suggest that a full module be completed in a single session where possible. A PowerPoint slide deck is provided for each of the modules, and there are also additional materials and a variety of other resources provided where appropriate. We strongly recommend that you allow time for student reflection both during and after each module, and that this be achieved by using zines. Zines are a powerful reflective pedagogical tool which are best described as a small handmade magazine which provides a great way to reflect, tell a story, or share thoughts, ideas and information. Zines can be easily made from a piece of A4 paper and a scissors (more on zines here

https://dublin.sciencegallery.com/latest/how-to-make-a-zine), and they provide an excellent way for students to reflect on what they have learned about research integrity as they progress through each module. Zines are also suitable for using as a class presentation they look great when put on display.

Although we do recommend the order of the modules and module timelines, the teacher has a high degree of flexibility with this. This flexibility will allow the teacher to adopt alternative pedagogical approaches and alternative module timelines which are more appropriate to the particular circumstances of the student cohort, class timetable, and any other school requirements. Thus, the modules can be completed more slowly or quickly than recommended, and completed over multiple class sessions if more suitable. Any particular section of any of the modules can also be completed as a stand-alone exercise (e.g. one of the discussion scenarios from the Technology module might be completed if there is only 20-30 minutes available). Also, the modules are designed to be iterated and developed, and we encourage the teacher to add material to the PowerPoint slide decks and amend any of the other material as they see fit. This may be particularly appropriate where it is possible to include material of relevance to the school, student group or locality.

The INTEGRITY Project

The INTEGRITY Project is a large European project funded by Horizon2020, and made up of a consortium of 11 European partners from 9 countries. The main objective of the INTEGRITY Project is to empower students for responsible research conduct and research integrity through evidence-based, scaffolded learning. The assumption is that research integrity should begin when students first get acquainted with research activities and academic thinking. This usually starts in primary school and continues to apply throughout secondary school for homework, group projects and exams. Research integrity is also of huge importance when the student progresses to University, further training, and the workplace.

The INTEGRITY Project is vitally important as current approaches to teaching research ethics and integrity are seen by many as insufficient to deal with the complex and changing world of research and its impacts. The objective of the INTEGRITY Project is to combine high quality training in research integrity with innovative modes of engagement in order to bring research integrity and research ethics alive in the classroom. Tools and modules have been built which have been designed to equip the next generation of students and researchers with the capabilities to conduct research in a responsible manner and to address new and unforeseen research challenges. This has been achieved by conducting an evidence-based analysis of student needs, identifying blind-spots, and uncovering expectations regarding research integrity across each of the 9 European partner countries. This process also involved mapping, categorizing and analysis of current teaching and pedagogical approaches to research integrity in order to better detect and mitigate gaps in teaching, and to help build tailor-made curricula and other tools specifically designed for secondary school students.

The ultimate goal is to empower students with knowledge that underlies principles of accuracy, honesty, reproducibility, responsibility and transparency. This will be used by students as they progress through the various education and training networks as research integrity relates to all the stages of the research process, namely from the study design through the methodology applied, the data collected and analysed, the interpretations made and the way results

are presented, where reflections on the social impacts of the research should always be taken into account.

General introduction to academic integrity

Research integrity means conducting research with responsibility and honesty so that others (e.g. the general public or the scientific community) have trust and confidence in the methods that were used and the findings that were reported. In the same way, students should act responsibly and with honesty, when doing and presenting their schoolwork, so that the teacher and peers can trust in the shared knowledge.

There are four guiding principles stating how to conduct research with integrity: **Reliability, Honesty, Respect and Accountability**. These principles are stated in the European Code of Conduct for Research Integrity (www.allea.org).

Reliability refers to the quality of the research to secure confidence in the findings that are reported. **Honesty** in research means being transparent, fair and unbiased in all aspects of the research process. **Respect** concerns not only being respectful to other people (e.g. other researchers, students, academic and non-academic peers) or institutions (e.g. Research Centres, Universities, Schools and Funding Agencies) but also being respectful to the object of the research (i.e. humans, animals, natural environment, society, etc.). **Accountability** means assuming responsibility for the research. Whether this relates with working with other people in different tasks of the study, or acknowledging that training is needed for people to perform certain tasks and providing those training options, or to assume responsibility for the findings that are reported, or to take responsibility to answer questions (e.g. from other scientists) regarding the research, being always honest, accurate and transparent.

Research misconduct refers to three actions that show a deliberate intention from the researcher engaging in them. These are **Plagiarism, Falsification and Fabrication. Plagiarism** refers to the appropriation of another person's ideas, results, processes or written material, without acknowledging it. **Falsification** refers to the manipulation of research materials, equipment or processes, or changing or omitting data results from an experiment, compromising the accuracy, transparency and reproducibility of the study. **Fabrication** refers to making up data or results and recording or reporting them as real.

There are other research practices that can also compromise the credibility and trust in the findings from scientific studies. These are often more subtle and difficult to prove an intention from the researcher engaging in such practices. These are known as *questionable research practices*. Examples of questionable research practices relate to authorship and collaboration issues. For example, when authors, who have not contributed to a study, are added to improve the chances of having that study accepted for publication, or authors, who have made a significant contribution to the study, are not given credit. Issues regarding drawing from the work of others, citing selectively and collection, analysis and reporting of data may also reflect questionable research practices.

Technology Module

→

Facilitation Guide

01 Learning Outcomes

After completion of this module, students should be able to:

- Understand and describe the key ethical and research integrity issues arising when using technology for schoolwork.
- Identify appropriate and inappropriate uses of technology when completing schoolwork and homework.
- Identify and critically examine areas of research which are ethical and unethical.
- Identify accurate and appropriate sources of news and data, and explain why some sources of data may be considered to be unreliable or ‘fake news’.
- Critically discuss social media and the potential for social media platforms to generate and spread ‘fake news’. Appreciate how using data and information from various social media sources may be inappropriate for schoolwork.

02 Overview & General Background

The Technology module is designed to focus on and explore the main issues with using technology for school work. This module is important as we interact with advanced technology and artificial intelligence (AI) on a daily basis through our mobile phones and other smart devices which may be in our homes. This means we have access to these devices and a huge variety of content when completing our schoolwork and homework. **This technology can be very helpful when we are teaching and learning, but the availability of this powerful technology can also allow us to act unethically and engage in poor research conduct.** An improved knowledge of how to use these technologies in a responsible and ethical way (research integrity) is now more important than ever, and likely to be even more important over the coming years as the technology advances.

03 Module Structure

Session Overview

This module contains a total of 6 discussion scenarios as follows:

- Voice assistants & smart devices.
- Smart & driverless cars.
- Fake news & deepfake technologies.
- Augmented reality (AR) & virtual reality (VR).
- Social media - TikTok, Instagram, Facebook, Twitch, YouTube etc.
- The Chinese Social Credit System.

The recommended teaching and pedagogical approach to be adopted for this module is as follows:

- The module begins with a broad introduction to technology and how this is relevant to research integrity. The opening slides included in the PowerPoint presentation should be used for this. The focus is kept on the main INTEGRITY learning outcomes, and how these are impacted by each of the technologies to be discussed.
- The class is then broken down into groups of 5-6 students. Each group will agree on one person within the group to report group findings/discussion back to the class.
- The teacher spends approximately 5 minutes introducing the first discussion scenario (voice assistants & smart devices). There are questions available for each of the discussion scenarios on the appropriate PowerPoint slide which can be used to prompt discussion. Not all of these questions need to be discussed, and other questions may also be discussed by the groups if there is time or if the discussion goes in a certain direction. The appropriate slide should be kept on the overhead screen during the group discussions so that the groups can see the discussion questions.
- The groups spend 20-25 minutes discussing the first discussion scenario. When group discussion is completed, the appointed person from each group reports back to the entire class in turn. The teacher can then allow a broader class discussion where the most relevant and interesting points are discussed for that particular scenario.
- This process is repeated for each of the remaining discussion scenarios.
- The teacher may wish to record the main points raised by the groups in an appropriate format. This can then be used to facilitate further discussion.
- When all discussion scenarios have been completed, the teacher may have a full class discussion on what has been reported back

by the groups. The teacher should focus on the research integrity learning outcomes. Additional slides are provided in the PowerPoint which can be used to facilitate further discussion (these slides can be displayed as the discussion is taking place).

- The teacher should conclude the module by providing a broad summary of the main points discussed, and how these relate back to the main INTEGRITY learning outcomes.

It is important to remember that there is often no definitive 'right' or 'wrong' answer to the questions in the discussion scenarios. The main objective is to use each of the discussion scenarios to empower the student for research integrity.

Pedagogical Approach and Classroom Organisation:

This module allows a flexible pedagogical approach to be adopted by the teacher. The recommended time for the module is approximately 3 hours, but the module may be completed in more or less time as deemed appropriate for the particular circumstances of the school, class size, available time etc. No detailed prior knowledge of the technologies in this module is required, but it is recommended that the teacher is aware of each of the technologies at a basic level. Links to additional resources, videos etc are provided in the notes section of the PowerPoint slide and in this teachers guide. The focus is not the technologies themselves, but on how the technologies influence the way students get their data, decide what is ethical in research, and complete their schoolwork and homework.

Key Words

Plagiarism
Fake news
Empowerment
Collaboration & authorship

Module Timeline

Estimate time: 3.5 hours total

Breakdown

→ Intro
10 mins
→ Voice assistants & smart devices
30 mins
→ Smart & driverless cars
30 mins
→ Fake news & deepfake technologies
30 mins
→ Augmented reality (AR) & virtual reality (VR)
30 mins
→ Social media - TikTok, Instagram, Facebook, Twitch, YouTube etc
30 mins
→ The Chinese Social Credit System
30 mins
→ Full class discussion and conclusions
20 mins

NOTE:

The durations mentioned for each part of the module are just a suggestion and are very flexible. The teacher/facilitator is encouraged to adapt these according to the time available for the class.

At What Cost? Rethinking the Fast-Fashion Industry

→

Facilitation Guide

01 Learning Outcomes

After completion of this module, students should be able to:

- Understand and describe the key concepts and the ethical issues in the fast fashion industry.
- Understand and explain the meaning of research integrity, the four guiding principles, and how the issues relate to the fast-fashion industry.
- Discuss the research integrity issues through the practical activities and powerpoint slides, being capable of formulating their own arguments and debate them in a class discussion, to reach agreement on best strategies to avoid engaging in such practices.
- Explain the importance of avoiding engaging in misconduct and questionable practices in school assignments and in school environments.

02 Overview & General Background

The primary focus of this module is on research integrity. We have chosen to pair it with the issue of fast-fashion to allow for a wider ethical discussion through a topic that is relevant to the target audience. Fast-fashion has gained significant traction due to the increased recognition of its impact on the environment by consequence of our own human consumption. Fashion can be an important way for a person to develop their personality and appearance, and can be especially important to young adults. In addition, this age group is subject to increasing social pressure to appear in a certain way, often through social media platforms. Therefore, this module will begin with the fast-fashion industry and its origins, and will then lead into a discussion around the unrealistic representations and expectations of the fast-fashion industry. **The topic also mirrors key issues related to research integrity such as plagiarism, authorship, collaboration and a reluctance to report unethical behaviour**. These are the key issues we aim to focus on and discuss through the topic of fast-fashion.

03 Module Structure

Session Overview

The goal of this workshop is to explore the key 'Integrity' issues in research using the fast-fashion industry as the theme.

The end goal is not to become an expert in the issues around fast-fashion, but to use it as a vehicle to address the key Integrity issues and to encourage students to question behaviours around fast-fashion, which may parallel ethical behaviours in research.

The theme will be explored using current core issues around the fast-fashion industry, while encouraging creative thought and innovation around what we can do to alter our habits and behaviours as individuals in a positive way.

There will be several activities for students to consider the impact of our collective actions, and to demonstrate how a change in our individual behaviours can affect a positive change in wider society.

Each slide is an opportunity to prompt discussion amongst students.

Key Words

Empowerment
Plagiarism
Collaboration and Authorship
Data collection

Materials Needed

- [ ] Item of clothing/ accessory/ device

Module Timeline

Estimate time: 140 minutes – total

→ Introduction: What is Fast-Fashion?
10 mins
→ Section One: Conditions:
30 mins
→ Section Two: Composition:
10 mins
→ Section Three**:** Culture:
30 mins
→ Section Four: Consumption:
20 mins
→ Section Five: Collaborate and Create:
30 mins
→ Zine time + Conclusion/Wrap-up:
10 mins

NOTE:
The durations mentioned for each part of the module are just a suggestion and are very flexible. The teacher/facilitator is encouraged to adapt these according to the time available for the class.

04

Sounds in the Age of Social Media: A Music Module

→

Facilitation Guide

01 Learning Outcomes

After completion of this module, students should be able to:

- Understand and describe the key concepts and the ethical issues in the music industry.
- Understand and explain the meaning of research integrity, the four guiding principles, and how the issues relate to the music industry.
- Discuss the research integrity issues through the practical activities and powerpoint slides, being capable of formulating their own arguments and debate them in a class discussion, to reach agreement on best strategies to avoid engaging in such practices.
- Explain the importance of avoiding engaging in misconduct and questionable practices in school assignments and in school environments.

02 Overview & General background

The primary focus of this module is on research integrity. We have chosen to pair it with the subject of music to allow for a wider ethical discussion through a subject that is relevant to the target audience. The music industry has changed significantly in the last decade, along with the listening habits of those under 25.

Streaming has become the primary method of listening to and discovering music, while creating a landscape in which artists can create groundbreaking albums from their very own bedrooms with just a few pieces of technology.

This is the future of the music industry, this is the platform through which young adults communicate, socialise and develop their own skills and creativity.

03 Module Structure

Session Overview

The goal of this workshop is to explore the ethical issues that arise within the creative world of music, within an open and supportive space where students can voice their opinions and insights.

The following outline is aimed only as a suggestion of what can be asked. Teachers should feel encouraged and free to tailor the following outline to their own preference, while keeping the core Integrity learning outcomes in mind.

Key Words

Empowerment
Plagiarism
Collaboration
and Authorship
Copyright

Module Timeline

Estimate time: 130 minutes – total

→ Introduction: How Bedroom Pop Evolved: **5 mins**
→ Icebreaker Activity – Create a Sound Creature: **10 mins**
→ Section One: Copyright and Blurred Lines: **30 mins**
→ Section Two: #DANCECHALLENGE: **30 mins**
→ Section Three**:** Artificial Music: **40 mins**
→ Zine time + Conclusion/Wrap-up: **15 mins**

NOTE:

The durations mentioned for each part of the module are just a suggestion and are very flexible. The teacher/facilitator is encouraged to adapt these according to the time available for the class.

05

Genetic Testing Module

→

Facilitation Guide

01 Learning Outcomes

After completion of this module, students should be able to:

- Comprehend the meaning of genetics, genetic tests and the reasons for their use.
- Comprehend and describe the methodological process involved in genetic tests.
- Comprehend the meaning and importance of informed consent, data privacy and confidentiality in genetic databases and biobanks
- Explain the meaning of research integrity and the four guiding principles.
- Explain the meaning of research misconduct and questionable research practices, and relate such practices with students' own actions when doing school assignments.
- Explain the importance of avoiding such practices in school work and life.

02 Overview & General Background

This session aims to equip students with the knowledge to comprehend the meaning and importance of research integrity. This will be achieved through a practical hands-on approach, where videos about key aspects of genetic tests, followed by fictional cases, outlining research integrity issues in genetic tests research, will be presented. We aim for students to identify and relate such examples of research misconduct and questionable research practices in genetic tests research, with their own practices when doing school assignments. This will engage students in a group discussion and to critically reflect on the importance of acting with responsibility and honesty in their own school work and life.

03 Module Structure

Session Overview

Key Words

Biobanks
Data Privacy
Genetic Tests
Informed consent
Plagiarism
Research
School assignment

Module Timeline

Estimate time: 90 minutes total

→ Part 1 — Introduction
30 mins

→ Part 2 — Practical Activity
55 mins

→ Part 3 — Conclusion
5 mins

NOTE:

The durations mentioned to each part of the module are just a suggestion. The teacher/facilitator is free to adapt these according to the time available for the class.

06

Data Transmission
→
Facilitation Guide

01 Learning Outcomes

After completion of this module, students should be able to:

- Appreciate how data and information can get distorted, reinterpreted and misunderstood as it moves between people.
- Understand the importance of tracking the source of data for research.
- Identify how different interpretations of data or information can lead to different research results and outcomes.
- Recognize the difference between trust and science.
- Understand the importance of accurately citing references and other sources of data.
- Demonstrate an awareness of the subjective interpretation of reality, and understand the role of trust in interpreting reality.

02 Overview & General background

The Data Transmission module is designed to provide a practical experience of how information and data gets misunderstood, distorted, and reinterpreted as it is transmitted between people. This module is based on the ‘childrens game of ‘Telephone’’ which is used to illustrate the importance of tracking down the original source of any story or piece of data, especially if this data is to be used for research or schoolwork. By systematically playing the game and reflecting on its results, the importance of responsibility in research; how and when to verify a message; how to recognize a piece of information as trustworthy; and the role played by trust in data transmission protocols will be highlighted. In addition, the student will develop a personal awareness of how information is transmitted through listening, hearing, and understanding. Students will also develop an appreciation of how this is closely linked to the data protocols of sending, accepting, and processing.

03 Module Structure

Session Overview

This module is broken down into three main activities as described in the following sections. The module allows for a flexible pedagogical approach to be adopted by the teacher. The recommended time for the module is approximately 2 hours, but the module may be completed in more or less time as deemed appropriate for the particular circumstances of the school, class size, available time etc.

Key Words

Data transmission
Data quality
Referencing data
Fake news

Module Timeline

Estimate time: 2 hours total

→ Activity 1: 'Telephone': **50 mins**
→ Activity 2: Discussion: **40 mins**
→ Activity 3: Recap: **30 mins**

NOTE:

The durations mentioned for each part of the module are just a suggestion and are very flexible. The teacher/facilitator is encouraged to adapt these according to the time available for the class.

07

Art, Activism & Awareness: An Art Module

→

Facilitation Guide

01 Learning Outcomes

After completion of this module, students should be able to:

- Understand and describe the key concepts and the ethical issues in the art world.
- Understand and explain the meaning of research integrity, the four guiding principles, and how the issues relate to the art world.
- Discuss the research integrity issues through the practical activities and powerpoint slides, being capable of formulating their own arguments and debate them in a class discussion, to reach agreement on best strategies to avoid engaging in such practices.
- Explain the importance of avoiding engaging in misconduct and questionable practices in school assignments and in school environments.

02 Overview & General Background

Art and creativity have evolved to reflect the current issues at heart in the 21st-century. According to Khan Academy, art today is comprised of bio art– created from living organisms, reflecting our need to explore sustainable and biodegradable materials, relational aesthetics and performative art, which invites viewer participation and interaction, feminism in art, AI art, digital technologies and 3D printing, mixed medias of salvaged and recycled materials and an acute awareness of our past, our present and our future.

Globalisation has changed the landscape for artists, as ideas and issues are echoed and heard across the world through social media or other technologies.

The line between high art and popular culture is blurred and played with by artists today, while addressing the social and political issues of the moment. Identity, culture, gender and sexuality, religiosity and spirituality are all interpreted as fluid models of the self, as those who construct their self, assign their own priorities to favour their very individual identities.

03 Module Structure

Session Overview

The goal of this workshop is to explore the ethical issues that arise within the creative world of art, within an open and supportive space where students can voice their opinions and insights.

The following outline is aimed only as a suggestion of what can be asked. Teachers should feel encouraged and free to tailor the following outline to their own preference, while keeping the core Integrity learning outcomes in mind.

Key Words

Empowerment
Plagiarism
Collaboration and Authorship
Appropriation
Activism

Module Timeline

Estimate time: 125 minutes — total

→ Section One: What if Everything is A Remix?: **30mins**
→ Section Two: Artificial Art :20minutes
→ Section Three: Art is Activism: **30mins**
→ Section Four: Collaboration vs Isolation: **30mins**
→ Wrap up & Reflections: **15 mins**

NOTE:
The durations mentioned for each part of the module are just a suggestion and are very flexible. The teacher/facilitator is encouraged to adapt these according to the time available for the class.

Space Exploration → Facilitation Guide

01 Learning Outcomes

After completion of this module, students should be able to:

- Articulate a variety of opinions and insights on the topics of research integrity in space science and space exploration.
- Create a model of a dystopian or idealistic society as a tool to question research integrity issues in a group challenge.
- Develop a variety of creativity, collaboration, critical thinking, and communication skills, and use these skills to challenge what research integrity should look like in a design challenge.
- Demonstrate an ability to apply research integrity concepts to speculative group challenges.

02 Overview & General Background

The goal of this module is to explore and question ethical issues in research using the themes of space science and space exploration. The end goal is not to become a topic expert, but to use space exploration as a vehicle to speculate and question issues around research integrity and research ethics. The themes will be explored using various teaching approaches including a walking debate and a design task which involves building a space habitat. These are designed to challenge students to create, collaborate and question what research integrity looks like in an applied group challenge.

03 Module Structure

Session Overview

This module is designed as a workshop to explore moral dilemmas and research integrity issues that are relevant to the topic of space exploration. The first activity is a series of walking debates where students have the opportunity to examine a variety of moral dilemmas in space science and technology. The second activity is a design challenge which requires the students to design a space colony and make a variety of decisions when disaster strikes the colony.

Key Words

Space
Ethics
Empowerment
Collaboration and groupwork

Module Timeline

Estimate time: 120 minutes – total

→ Activity One – A Question of Space
60mins

→ Activity Two – Design a Space Colony
60mins

NOTE:

The durations mentioned for each part of the module are just a suggestion and are very flexible. The teacher/facilitator is encouraged to adapt these according to the time available for the class.

09

Animal Experimentation

→

Facilitation Guide

01 Learning Outcomes

After completion of this module, students should be able to:

- To comprehend the key concepts and ethical. issues in animal experimentation.
- To comprehend and describe the steps. involved in the research process.
- To explain the meaning of research integrity and the four principles.
- To explain the meaning of research misconduct and questionable research practices, and relate such practices with students' school work practices.
- To explain the importance of avoiding such practices in school work and life.

02 Overview & General Background

This session aims to equip students with the knowledge to comprehend the meaning and importance of research integrity. This will be achieved through a practical hands-on approach, where real and fictional cases, outlining research integrity issues in biomedical research using animals, will be presented. We aim for students to identify and relate such examples of research misconduct and questionable research practices, with their own school work practices and environment. This will engage students in a group discussion and critical reflection about the importance of acting responsibly and with honesty in their own school work and within their life.

Animal experimentation is a controversial topic that raises **key ethical questions**, particularly concerning **animal welfare**. Animal experimentation is defined by the use of non-human animals in experiments, where the aim is to control a set of variables or procedures that will affect the tested animal, so that the result can be translated into human or animal biology. It is applied in **biological and biomedical research, in toxicology and safety testing and in teaching**, at higher education level only. The main purposes have been to improve the knowledge about certain diseases affecting humans or animals, to test the safety of new chemical and pharmaceutical products and to test new medicines or treatments or medical procedures. Animals have also been used to improve the knowledge about the basic biology of humans or animals.

03 Module Structure

Session Overview

Key Words

Animal Research

Data

Ethics

Honesty

Integrity

Plagiarism

Responsibility

Schoolwork

Timeline Overview

Structure Duration (90 minutes)

→ Part 1 — Introduction:
30 mins

→ Part 2 — Practical Activity:
55 mins

→ Part 3 — Conclusion/Wrap-up:
5 mins

NOTE:

The durations mentioned to each part of the module are just a suggestion. The teacher/facilitator is free to adapt these according to the time available for the class.

Epidemiology Module

→

Facilitation Guide

01 Learning Outcomes

After completion of this module, students should be able to:

- Understand the importance of working in teams and collaborating with others.
- Identify areas of research and research decisions which are ethical and unethical.
- Identify accurate and appropriate sources of data, and explain why some sources of data may be considered to be unreliable.
- Critically discuss how to identify unethical behaviours in research, and develop strategies for reporting any unethical behaviour.

02 Overview & General background

Epidemiology is the branch of medicine which deals with the incidence, distribution, and control of diseases and other factors relating to health. The word ‘epidemiology’ is derived from Greek and literally means ‘the study of what is upon the people’. Epidemiology is widely applied to cover the description and causation of epidemic and infectious diseases such as COVID-19, but also of diseases in general including their related conditions. Thus, epidemiologists are interested in examining other areas of healthcare such as high blood pressure, mental illness, diabetes and obesity.

03 Module Structure

Session Overview

The activity takes the form of a decision tree with branching consequences that feed into the next decision. The purpose of the activity is not to guide students along the 'correct' or most ethical path. Instead, the purpose is to follow the journey on repeat and see how it unfolds each time, discussing and dealing with any consequences as they arise.

Students can complete this activity individually or in a small class group of 2–3 students. Each student or group will need access to a laptop, computer, or iPad. If students are working in groups there must be consensus on each decision before the group can proceed to the next decision. Students will be relying on their collective moral compass rather than an in-depth understanding of epidemiology.

Key Words

Plagiarism
Falsification of data
Informed Consent
Exploitation of vulnerable people

Module Timeline

Estimate time: 2.5 hours total

→ Warm up
15 mins

→ Introduction to Epidemiology
15 mins

→ The 'situation room' activity
20 mins

→ Teacher preparation and getting set up – **10 minutes (teacher preparation 30 mins)**

→ Playing the game
(and some variations)
60 mins.

→ Wrap up and reflection
30 mins

NOTE:

The durations mentioned for each part of the module are just a suggestion and are very flexible. The teacher/facilitator is encouraged to adapt these according to the time available for the class.

INTEGRITY is made up of a consortium of 11 European partners from 9 countries led by the University of Utrecht. The development of the secondary school tools in this manual was led by Trinity College Dublin. The team consisted of researchers from the Universidade do Porto, the University of Ljubljana, and Science Gallery Dublin.

You can visit the INTEGRITY H2020 website https://h2020integrity.eu at any time to find out more about the project, meet the researchers behind INTEGRITY H2020, and get access to many additional tools & resources.

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Design: Studio Suss