Environmental Ethics

3. Biodiversity and Conservation

3.1. Intended Learning Outcomes

By the end of the lessons, the students will be able to:

1. Scrutinize the instrumental and intrinsic value of nature
2. Understand the importance of maintaining ecological balance and biodiversity
3. Evaluate some measures for conservation to environmental protection
4. Examine some arguments for or against using animals for food and experimentation, and develop their own stands using theories of ethics

*\*Prerequisite knowledge: Normative Ethics, the nature of morality, moral principles, moral reasoning, theory of conduct, theory of value & virtue (Refer to* [*‘NSS Ethics and Religious Studies Curriculum Support Materials - Compulsory Part: Ethics - Module 1: Normative Ethics’*](http://www.edb.gov.hk/en/curriculum-development/kla/pshe/references-and-resources/ethics-and-religious-studies/support-materials-compulsory-part-module-1-normative-ethics.html)*)*

3.2. Introduction

In our daily life, we may encounter some ethical questions arise from the following situations:

In his book *‘Earth in the Balance: on Environment’*, Al Gore[[1]](#footnote-1) wrote, ‘The big lie in this debate is that a good environment is bad economics. We ought to seek, and we can find, sustainable growth that doesn’t undermine human health or the natural ecosystems that support life… The bottom line is that there is not only an environment to be saved but money to be made in reducing the buildup of greenhouse gases.’

In our civilization, ecological balance/biodiversity and economic development seem always contradicting each other. In a world with so much poverty and hunger, how can we justify paying so much attention to conservation to environment protection?

A dog owner told her friend, ‘Donna is my beloved dog, and I feed her with chicken and beef every day. We should be kind and friendly to dogs. I just can’t imagine why people in Guangxi could be so brutal to run Dog Feast each year!’

In some societies, killing some kinds of animals for food is fine, but the others are unethical or illegal. How to draw such fine line?

In these lessons, the students will contemplate issues regarding the instrumental and intrinsic value of nature, the importance of maintaining ecological balance and biodiversity, environmental conservation, as well as using animals for food and experimentation.

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| References:   * http://0-go.galegroup.com.edlis.ied.edu.hk/ps/retrieve.do?isETOC=true&inPS=true&prodId=GVRL&userGroupName=hkioel&resultListType=RELATED\_DOCUMENT&contentSegment=9780737752670&docId=GALE|CX3021100015 * http://assets.wwfhk.panda.org/downloads/eco\_vandalism\_how\_to\_guide.jpg * http://blogsdelagente.com/qijie/2010/09/13/the-importance-of-environment-protection/?doing\_wp\_cron * http://earthuntouched.com/causes-biodiversity-loss-rtr/ * http://nwf.org/Wildlife/Wildlife-Conservation/Biodiversity.aspx * http://wwf.panda.org/about\_our\_earth/teacher\_resources/webfieldtrips/ecological\_balance/ * http://www.ask.com/science/environmental-conservation-important-8051203e35763b4f * http://www.bbc.co.uk/ethics/animals/using/eating\_1.shtml * http://www.bbc.co.uk/ethics/animals/using/experiments\_1.shtml * http://www.edb.gov.hk/en/curriculum-development/kla/pshe/references-and-resources/ethics-and-religious-studies/support-materials-compulsory-part-module-1-normative-ethics.html * http://www.nature.com/scitable/knowledge/library/intrinsic-value-ecology-and-conservation-25815400 * http://www.scmp.com/news/hong-kong/health-environment/article/1921340/hong-kong-recycling-plant-set-deal-electronic * http://www.scmp.com/news/hong-kong/law-crime/article/1923535/mountains-misery-tin-shui-wai-residents-left-fearing-safety * http://www.sustainablemeasures.com/node/33 * http://www.tutorvista.com/content/biology/biology-ii/environment-and-environmental-problems/ecological-balance.php * http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/ * http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/ecosystem\_diversity/ * http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/genetic\_diversity/ * http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/species\_diversity/ * https://books.google.com.hk/books?hl=en&lr=&id=shSmG2-J7nAC&oi=fnd&pg=PA206&dq=arguments+for+or+against+using+animals+for+food+and+experimentation&ots=FFiYopSTly&sig=QSLNcCK82nj6AKoRBkc9bIVpzvg&redir\_esc=y#v=onepage&q&f=false * https://www.hongkongfp.com/2016/02/02/plastic-paradise-hong-kongs-packaging-problem/ * https://www.khanacademy.org/partner-content/CAS-biodiversity/why-is-biodiversity-threatened/local-threats-to-biodiversity/a/answers-to-the-exploration-questions-local-threats-to-biodiversity * https://www.khanacademy.org/partner-content/CAS-biodiversity/why-is-biodiversity-threatened/local-threats-to-biodiversity/v/human-activities-that-threaten-biodiversity * <https://www.morehouse.edu/facstaff/nnobis/papers/Journal-of-Applied-Phil-Cohen.pdf> * <http://www.ciwf.org.uk/media/7262917/ciwf-personality-test-complete-set.pdf> * http://www.faradayschools.com/teacherspages/srsp-home/11-16/srsp-11-16-topic-5-u1d-animal-rights-issues/ |

* 1. Teaching and learning process

Suggested teaching period: 4 lessons.

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| 1. Introduction    1. Ask students to find some photographs on nature which arouse their feelings, and to share with their classmates.    2. Play the online video on ‘Nature Is Speaking: Julia Roberts is Mother Nature’ at <https://www.youtube.com/watch?v=dGpx_HMVoUU&index=2&list=PL5WqtuU6JrnWOoUhgaP-1UtEoDSn4lSr8> (~2 minutes). Ask students the following questions:       1. What have we humans done to Mother Nature? How do our daily lives affect her?       2. ‘When nature thrives, people thrive; when nature falters, people falter, or worse’. Do you agree? Why?       3. After hearing from Mother Nature, how would you response to her? (May ask students to write a letter to Mother Nature.)      1. Instrumental and intrinsic value of nature: maintenance of ecological balance and biodiversity    1. Review the concepts of ‘instrumental’ and ‘intrinsic’ values with the students using ‘Worksheet 1: Revision on instrumental and intrinsic values’    2. Ask students to form groups. Give them 3 minutes to brainstorm the value of nature and write on post-it notes one by one. Then, ask them to categorize them by ‘instrumental value’ and ‘intrinsic value’ separately. After that, ask each group to post their work on the blackboard and share their answers. In the meantime, students are required to complete ‘Worksheet 2: Instrumental and intrinsic value of nature’. Teacher facilitates a class discussion afterwards.    3. Ecological balance       1. Play the following online videos (or other related videos in Chinese):  * ‘Introduction to Ecology’ at <https://www.youtube.com/watch?v=GlnFylwdYH4> (~5 minutes) * ‘Ecological balance’ at <https://www.youtube.com/watch?v=k0u5iAInalM> (~1 minutes)   Ask students to form groups and complete ‘Worksheet 3: Ecological balance (I)’. Discuss their answers afterwards.   * + 1. Distribute ‘Worksheet 4: Ecological balance (II)’ and ask students to complete it in pairs. Pick some students to share their answers.   1. Biodiversity      1. Have students to form groups and complete ‘Worksheet 5: Biodiversity (I)’. Discuss their answers together afterwards.      2. Play the online video on ‘Human activities that threaten biodiversity’ at <https://www.youtube.com/watch?v=2RC3Hsk90t8> (12:50 mins) (or other related videos in Chinese). Ask students to complete ‘Worksheet 6: Biodiversity (II)’. Then, check and discuss the answers.  1. Importance of conservation to environmental protection   3.1. Ask the students to do a newspaper cutting at home on topic of ‘environmental destructions’, and present their findings in the following lesson. Alternatively, teacher may demonstrate some current news headlines concerning peoples’ acts destroying the environment by showing the sample headlines (see the samples in this unit). Ask students:   * Do you think Hong Kong people have enough awareness of environmental protection? * What are the negative impacts of these destructive acts to people, other species, and nature itself? * How can we raise people’s awareness of the importance of environmental protection?   Teacher can ask students to form groups and brainstorm some ways to promote environmental protection. Meanwhile, teacher may separate the blackboard into 4 columns and ask each group to write down their suggestions respectively. Facilitate a class discussion afterwards.   |  |  |  |  | | --- | --- | --- | --- | | Personal | Social | National | International |   3.2. Ask each group representative coming out to draw a ‘Scenario card’. Discuss how to deal with the problem if they witness it, and do a presentation. Students may work on ‘Worksheet 7: Measures for conservation to environmental protection’ while listening to the presentations, and give feedbacks to their fellow classmates.   1. Arguments for or against using animals for food and experimentation    1. Students are given a self-survey to view their perspectives on animal rights and animal welfare. (worksheet 8)    2. Students are then given two stimuli to arouse their awareness of the situation of animals that are being tortured by human beings. Students are further led to consider the nature of animal rights. (worksheet 9)    3. Ask student to gather some arguments for or against using animals for food and experimentation. They may finish Question 1 of ‘Worksheet 10’ at home, and present their findings in their groups during the lesson.    4. Assign the roles of (a) Buddhist, (b) animal right activist, (c) meat manufacturer, and (d) scientist to the groups, and have them to present their views on the issue. Teacher (or a designated student) may perform as a facilitator for the forum.   5. Conclusion and students’ self-evaluation  5.1. Review the key learning points of the topic on ‘Biodiversity and conservation’ with  the students.  5.2. Ask students to consolidate their knowledge and evaluate their learning outcomes by completing ‘Worksheet 10: Summary & self-evaluation’. |

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| **Worksheet 1: Revision on instrumental and intrinsic values**  *Read the following passage and then complete the task below.*   |  | | --- | | **Intrinsic and Instrumental Value**  Virtue Ethics stresses the importance of virtue/value. Value can be divided into two types, “Intrinsic Value” and “Instrumental Value”.  What is “Intrinsic Value”? A certain action is virtuous, since it has in itself the characteristics of virtue. For instance, while “humanity”, “righteousness”, “truth”, “goodness” and “beauty” may all be understood differently by people of different cultures, religions or ages, the vast majority of people would still acknowledge that they are virtues.  What is “Instrumental Value”? The importance of some values lies in the fact that we can obtain some higher or more important value through them. For example, through sacrifice, struggle and diligent study, we can achieve a happy life.  Source: *‘****Intrinsic Value and Instrumental Value****’* at <http://www.edb.gov.hk/en/curriculum-development/kla/pshe/references-and-resources/ethics-and-religious-studies/support-materials-compulsory-part-module-1-normative-ethics.html> |   *Analyze the following cases to see if ‘intrinsic’ or ‘instrumental’ values are shown. Explain your answers.*   |  |  | | --- | --- | | **Case** | **Analysis** | | Filipino farmers are keen on protecting the banana farms because they bring them job opportunities and income. | **‘Nature provision’** here is of \*intrinsic / instrumental value, because: | | Within Druidry (ancient Gaul, Britain and Ireland), nature is regarded to be absolutely sacred. Druids show respect to nature by all means without questioning why. | **‘Nature provision’** here is of \*intrinsic / instrumental value, because: | |
| **Worksheet 1: Revision on instrumental and intrinsic values**  ***(For teachers’ reference)***  *Read the following passage and then complete the task below.*   |  | | --- | | **Intrinsic and Instrumental Value**  Virtue Ethics stresses the importance of virtue/value. Value can be divided into two types, “Intrinsic Value” and “Instrumental Value”.  What is “Intrinsic Value”? A certain action is virtuous, since it has in itself the characteristics of virtue. For instance, while “humanity”, “righteousness”, “truth”, “goodness” and “beauty” may all be understood differently by people of different cultures, religions or ages, the vast majority of people would still acknowledge that they are virtues.  What is “Instrumental Value”? The importance of some values lies in the fact that we can obtain some higher or more important value through them. For example, through sacrifice, struggle and diligent study, we can achieve a happy life.  Source: *‘****Intrinsic Value and Instrumental Value****’* at <http://www.edb.gov.hk/en/curriculum-development/kla/pshe/references-and-resources/ethics-and-religious-studies/support-materials-compulsory-part-module-1-normative-ethics.html> |   *Analyze the following cases to see if ‘intrinsic’ or ‘instrumental’ values are shown. Explain your answers.*   |  |  | | --- | --- | | **Case** | **Analysis** | | Filipino farmers are keen on protecting the banana farms because they bring them job opportunities and income. | **‘Nature provision’** here is of \*~~intrinsic~~ / instrumental value, because:  Wealth / happiness (the ultimate intended outcomes or values) are brought by the means of protecting the environment. | | Within Druidry (ancient Gaul, Britain and Ireland), nature is regarded to be absolutely sacred. Druids show respect to nature by all means without questioning why. | **‘Nature provision’** here is of \*intrinsic / ~~instrumental~~ value, because:  It has value in itself. If people devote themselves in protecting and respecting the nature, it thrives and sustains its sacredness. | |

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| **Worksheet 2: Instrumental and intrinsic value of nature**   1. **Collate the instrumental and intrinsic values of nature presented by your fellow classmates.**  |  |  | | --- | --- | | **Instrumental value** | **Intrinsic value** | | *E.g. Nature provides job opportunities and income for human beings.* | *E.g. The sacredness of nature is good in itself.* |  1. **How important is nature … (Are these considerations intrinsic or instrumental?)**    1. **To you?**    2. **To other animals?**    3. **To human generations?**    4. **In itself?** |

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| **Worksheet 2: Instrumental and intrinsic value of nature**  ***(For teachers’ reference)***   1. **Collate the instrumental and intrinsic values of nature presented by your fellow classmates.**  |  |  | | --- | --- | | **Instrumental value** | **Intrinsic value** | | *E.g. Wealth - Nature provides job opportunities and income for human beings.*   * *Natural resource value / need fulfillment - It provides food for human and other animals.* * *Comfort & safe - It provides shelters for people.* * *Cultural value / civil advancement - It provides natural resources such as fuels, metals to build infrastructures; and inspires peoples to write literature.* * *Medicinal value / health- It provides medicine for people.* * *Spiritual value / joy & peace - It helps people nurture spirituality and relax.* * *Recreational value – Diving, hiking, climbing etc. give people fun.*   (Or other reasonable answers) | *E.g. Sacredness - The sacredness of nature is good in itself.*   * ***Subjective intrinsic value***   *Many people value species and ecosystems intrinsically (e.g., for their complexity, diversity, spiritual significance, wildness, beauty, or wondrousness).*   * ***Objective intrinsic value***   *All living organisms, species and ecosystems have a good of their own. According to the natural-historical value view, natural entities have intrinsic value in virtue of their independence from human design and control and their connection to human-independent evolutionary processes.*  (Or other reasonable answers) |   Reference: <http://www.nature.com/scitable/knowledge/library/intrinsic-value-ecology-and-conservation-25815400>   1. **How important is nature …(Are these considerations intrinsic or instrumental?)**    1. **To you?**    2. **To other animals?**    3. **To human generations?**    4. **In itself?**   (Any reasonable answers) |
| **Worksheet 3: Ecological balance**  Watch the online videos on ***‘Introduction to Ecology’*** at <https://www.youtube.com/watch?v=GlnFylwdYH4>, and ***‘Ecological balance’*** at <https://www.youtube.com/watch?v=k0u5iAInalM>. Write down some key points in the box below.   |  | | --- | | 1. **What is ‘ecology’?** 2. **Why is ‘Interdependence’ important to living organisms and nonliving components? Please explain with examples.** 3. **What is ‘ecological balance’? Please explain with examples.** |  1. **Draw a mind-map to illustrate ecological balance.** 2. ***Challenging level (Optional):* What factors may disrupt ecological balance?** |

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| **Worksheet 3: Ecological balance (I)**  ***(For teachers’ reference)***  Watch the online videos on ‘Introduction to Ecology’ at <https://www.youtube.com/watch?v=GlnFylwdYH4> & ‘Ecological balance’ at <https://www.youtube.com/watch?v=k0u5iAInalM>. Write down some key points in the box below.   |  | | --- | | 1. **What is ‘ecology’?**   Ecology is the study of the relations of organisms to one another and to their physical environment.   1. **Why is ‘Interdependence’ important to living organisms and nonliving components? Please explain with examples.**   It is important because the survival of species is dependent on other living organisms and nonliving components.  E.g. Human needs oxygen produced by plants to survive;  E.g. Plants need carbon dioxide from human or other organisms, or volcano eruptions.     1. **What is ‘ecological balance’? Please explain with examples.**   Ecological balance is the condition under which there is a perfect equilibrium in the energy production and consumption in the given ecosystem.  Or in other words, it is a stable balance in the numbers of each species in an ecosystem.  E.g. In some traditional Asian villages, parents will plant some trees for their new born baby. These trees will support the consumption needs of a newly formed family (new wooden houses) when the baby becomes an adult and ready for marriage after 20 years. |  1. **Draw a mind-map to illustrate ecological balance.**   (any reasonable answers)   1. ***Challenging level (Optional):* What factors may disrupt ecological balance?**   **Man-made causes:**  Human population explosion, overfishing, over hunting, over consumption of food and natural resources, war, genetic engineering, introduction of new species, pollution & global warming, etc.  **Natural hazards:**  Volcano eruption, fire, drought, flooding, landslide, earthquake, typhoon, etc.  The above factors may lead to sudden death of some species, which cause ecological imbalance. |

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| **Worksheet 4: Ecological balance (II)**  *Read the following article and then answer the questions below.*   |  | | --- | | **Ecological Balance in Nature**  The environment in which the man and other organisms live is called the **biosphere**. The biosphere is made up of different regions that have different types of flora (plants) and fauna (animals). The types of organisms in an area are determined by various factors such as the climate, temperature, rainfall, etc.  The regions based on their physical and biological nature are classified into ecosystems. For example, pond ecosystem, evergreen forest ecosystem, desert ecosystem, etc. The organisms, in addition to being dependent on the environment for their needs, are also dependent on each other. This dependency is especially for food. This results in the presence of food chains and food webs.  Source: http://www.tutorvista.com/content/biology/biology-ii/environment-and-environmental-problems/ecological-balance.php |  1. **Fill the following food chains with examples on each level.**  |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **Grassland** (e.g.) | **Pond** | **Forest** | **Desert** | | **Carnivore (Predator) 2** | Eagle |  |  |  | | **Carnivore (Predator) 1** | Snake |  |  |  | | **Herbivore (Consumer)** | Rabbit |  |  |  | | **Producer** | Grass |  |  |  |  1. **Give an account of how human upsets the ecological balance. Take the food chains in Question 1 as examples to elaborate your answer.** 2. ***Challenging level (optional):* ‘There is nothing wrong for human to disrupt ecological balance, for nature has the capacity to resume equilibrium itself.’ Do you agree? Explain your answer using theories of ethics.**   ***Or “There is no point to sacrifice so much for the so called equilibrium since the nature will come up with a new equilibrium later.*”** |

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| **Worksheet 4: Ecological balance (II)**  ***(For teachers’ reference)***  *Read the following article and then answer the questions below.*   |  | | --- | | **Ecological Balance in Nature**  The environment in which the man and other organisms live is called the **biosphere**. The biosphere is made up of different regions that have different types of flora (plants) and fauna (animals). The types of organisms in an area are determined by various factors such as the climate, temperature, rainfall, etc.  The regions based on their physical and biological nature are classified into ecosystems. For example, pond ecosystem, evergreen forest ecosystem, desert ecosystem, etc. The organisms, in addition to being dependent on the environment for their needs, are also dependent on each other. This dependency is especially for food. This results in the presence of food chains and food webs.  Source: http://www.tutorvista.com/content/biology/biology-ii/environment-and-environmental-problems/ecological-balance.php |  1. **Fill the following food chains with examples on each level.**  |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **Grassland** (e.g.) | **Pond** | **Forest** | **Desert** | | **Carnivore (Predator) 2** | Eagle | Egret | Tiger | Snake | | **Carnivore (Predator) 1** | Snake | Fish | Fox | Lizard | | **Herbivore (Consumer)** | Rabbit | Tadpole | Squirrel | Grasshopper | | **Producer** | Grass | Algae | Tree (fruit) | Desert plant |   Arrow showing food chains levels.  (Or other reasonable answers)   1. **Give an account of how human upsets the ecological balance. Take the food chains in Question 1 as examples to elaborate your answer.**   Human usually try to modify the environment to fulfill his needs and wants. For example, human may destroy the upper level of the food chain by exhaustive hunting of tigers and foxes for making hide products. This resulted in increased population of herbivores that in turn adversely affected the plant population. Less cover of vegetation on land led to desertification.  On the other hand, human may also destroy the lower level of the food chain by uprooting grasslands, filling up ponds, and knocking down forests for building houses and infrastructures. With that, all habitants become homeless and starved, which causes their death, or even extinction of some species.     1. ***Challenging level (optional):* ‘There is nothing wrong for human to disrupt ecological balance, for nature has the capacity to resume equilibrium itself.’ Do you agree? Explain your answer using theories of ethics.**   (Any reasonable answers)  ***Or “There is no point to sacrifice so much for the so called equilibrium since the nature will come up with a new equilibrium later.*”**  (Any reasonable answers) |

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| **Worksheet 5: Biodiversity (I)**  *Read the following articles and then answer the questions below.*   |  | | --- | | **Information 1: What is biodiversity?**  Biological diversity – or biodiversity – is the term given to the variety of life on Earth. It is the variety within and between all species of plants, animals and micro-organisms and the ecosystems within which they live and interact.  Biodiversity comprises all the millions of different species that live on our planet, as well as the genetic differences within species. It also refers to the multitude of different ecosystems in which species form unique communities, interacting with one another and the air, water and soil.  Source: http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/ |  |  |  |  |  | | --- | --- | --- | --- | | **Information 2: Levels of Biodiversity**  **Biodiversity is explored at three levels:**   |  | | --- | | [**Genetic diversity**](http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/genetic_diversity/)  It refers to the variety of genes within a species. Each species is made up of individuals that have their own particular genetic composition. Within a species there may also be discrete populations with distinctive genes.  http://www.icr.org/article/mechanisms-adaptation-biology-genetic/ | | [**Species diversity**](http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/species_diversity/)  It refers to the variety of species within a region. It is not evenly distributed around the world or across continents. Thirty-four biodiversity hotspots have been identified globally. These hotspots collectively comprise just 2.3% of the Earth’s land surface yet hold especially high numbers of species that occur nowhere else – half the world’s plant species and 42% of all terrestrial vertebrate species. They are also home to 75% of the planet’s most threatened mammals, birds and amphibians.   http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/ | | [**Ecosystem diversity**](http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/ecosystem_diversity/)  It refers to the variety of ecosystems in a given place. Within any broader landscape there is a mosaic of interconnected ecosystems.  All species depend on other species for survival. Ecosystems vary in size. A large stand of forest or a small pond can each be described as an ecosystem. |   Sources: <http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/genetic_diversity/>  <http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/species_diversity/>  http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/ecosystem\_diversity/ |  1. **From the above information and your knowledge, why is biodiversity important to people and the health of ecosystems?** 2. ***Challenging level (Optional):*** Illustrate the importance mentioned in question 1 with a local or regional case which contains negative impacts brought by diminishing biodiversity. What intrinsic or instrumental values are undermined in your chosen case? |
| **Worksheet 5: Biodiversity (I)**  ***(For teachers’ reference)***  *Read the following articles and then answer the questions below.*   |  | | --- | | **Information 1: What is biodiversity?**  Biological diversity – or biodiversity – is the term given to the variety of life on Earth. It is the variety within and between all species of plants, animals and micro-organisms and the ecosystems within which they live and interact.  Biodiversity comprises all the millions of different species that live on our planet, as well as the genetic differences within species. It also refers to the multitude of different ecosystems in which species form unique communities, interacting with one another and the air, water and soil.  Source: http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/ |  |  |  |  |  | | --- | --- | --- | --- | | **Information 2: Levels of Biodiversity**  **Biodiversity is explored at three levels:**   |  | | --- | | [**Genetic diversity**](http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/genetic_diversity/)  It refers to the variety of genes within a species. Each species is made up of individuals that have their own particular genetic composition. Within a species there may also be discrete populations with distinctive genes.  http://www.icr.org/article/mechanisms-adaptation-biology-genetic/ | | [**Species diversity**](http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/species_diversity/)  It refers to the variety of species within a region. It is not evenly distributed around the world or across continents. Thirty-four biodiversity hotspots have been identified globally. These hotspots collectively comprise just 2.3% of the Earth’s land surface yet hold especially high numbers of species that occur nowhere else – half the world’s plant species and 42% of all terrestrial vertebrate species. They are also home to 75% of the planet’s most threatened mammals, birds and amphibians.   http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/ | | [**Ecosystem diversity**](http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/ecosystem_diversity/)  It refers to the variety of ecosystems in a given place. Within any broader landscape there is a mosaic of interconnected ecosystems.  All species depend on other species for survival. Ecosystems vary in size. A large stand of forest or a small pond can each be described as an ecosystem. |   Sources: <http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/genetic_diversity/>  <http://www.wwf.org.au/our_work/saving_the_natural_world/what_is_biodiversity/species_diversity/>  http://www.wwf.org.au/our\_work/saving\_the\_natural\_world/what\_is\_biodiversity/ecosystem\_diversity/ |  1. **From the above information and your knowledge, why is biodiversity important to people and the health of ecosystems?**   **Biodiversity is important to people, because**   * It provides us with varieties of foods and materials and contributes to the economy.  Without a diversity of pollinators, plants, and soils, we can buy much less products in markets. * Most medical discoveries to cure diseases and lengthen life spans were made because of research into plant and animal biology and genetics.  Every time a species goes extinct or genetic diversity is lost, we may also lose the chance to have a new vaccine or drug.   **Biodiversity is important to the health of ecosystems, because**   * Biodiversity is an important part of [ecological services](http://nwf.org/Wildlife/Wildlife-Conservation/Ecosystem-Services.aspx) that make life livable on Earth. They include everything from cleaning water and absorbing chemicals, which wetlands and forests do, to providing oxygen for animals to breathe. * Biodiversity allows for ecosystems to adjust to [disturbances](http://nwf.org/Wildlife/Wildlife-Conservation/Disturbance.aspx) like extreme fires and floods. If a reptile species goes extinct, a forest with 20 other reptiles is likely to adapt better than another forest with only one reptile. * Genetic diversity prevents [diseases](http://nwf.org/Wildlife/Threats-to-Wildlife/Disease.aspx) and helps species adjust to changes in their environment.   (Or other reasonable answers)  Reference: <http://nwf.org/Wildlife/Wildlife-Conservation/Biodiversity.aspx>    Illustrate the importance mentioned in question 1 with a local or regional case which contains negative impacts brought by diminishing biodiversity. What intrinsic or instrumental values are undermined in your chosen case?(Any reasonable answers) |

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| **Worksheet 6: Biodiversity (II)**  Watch the online video on **‘Human activities that threaten biodiversity’** at <https://www.youtube.com/watch?v=2RC3Hsk90t8>, and complete the tasks below.   1. **Multiple choice questions -** circle the correct answer  |  | | --- | | 1. **Which of the following statements are true about ‘carrying capacity’?** 2. *It refers to the maximum number of individuals of a given species that an area's resources can sustain indefinitely without significantly depleting or degrading those resources.* 3. *If human population exceeds the planet’s limit, famine occurs to limit it.* 4. *Technology enhances the ‘carrying capacity’ of our planet.* 5. i & ii only 6. ii & iii only 7. all of the above      1. **According to the 2003 paper by McKee et al., which of the following factors are tightly linked?** 2. human population growth, and species richness 3. human development, and beauty of landscape 4. quality of life, and pollution 5. **What are the human mediated ‘local’ factors causing biodiversity loss?** 6. *Land-use changes* 7. *Global warming caused by greenhouse effect* 8. *Pollution* 9. *Resource exploitation* 10. *Ocean acidification* 11. *Exotic species* 12. ii & v 13. i, iii, iv & vi 14. all of the above |   **II. Discussion questions**   1. **Elaborate how the human mediated ‘local’ factors diminish biodiversity.** 2. ***Challenging level (optional*) – Survivors**  |  | | --- | | ***Carrying capacity*** *refers to the population that can be supported indefinitely by its supporting systems.*  *A simple example of carrying capacity is the number of people who could survive in a lifeboat after a shipwreck. Their survival depends on how much food and water they have, how much each person eats and drinks each day, and how many days they are afloat. If the lifeboat made it to an island, how long the people survived would depend upon the food and water supply on the island and how wisely they used it.*  Reference: http://www.sustainablemeasures.com/node/33 |   **Imagine that you are one of the survivors in a lifeboat, with the following conditions:**   |  |  | | --- | --- | | Population size | 10 people:  You, young couples, a strong man, a pregnant woman, a child, an injured old lady, a doctor, a priest | | Resources available | Water (for 10 people in 20 days)  Food (for 10 people in 15 days)  Fishing tool, 4 paddles, a knife | | Remarks | It takes 30 days to reach the closest island. |  * 1. What would you do for survival?   2. How would you use and distribute the resources? What are the guiding principle(s)?   3. In case it is running out of water and somebody should be sacrificed in order to preserve others, who should that one be? Using theory of values to explain your answer.   4. What are the analogies of this scenario to ‘carrying capacity’ of the planet? |

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| **Worksheet 6: Biodiversity (II)**  ***(For teachers’ reference)***  Watch the online video on **‘Human activities that threaten biodiversity’** at <https://www.youtube.com/watch?v=2RC3Hsk90t8>, and complete the tasks below.  **I. Multiple choice questions -** circle the correct answer   |  | | --- | | 1. **Which of the following statements are true about ‘carrying capacity’?** 2. *It refers to the maximum number of individuals of a given species that an area's resources can sustain indefinitely without significantly depleting or degrading those resources.* 3. *If human population exceeds the planet’s limit, famine occurs to limit it.* 4. *Technology enhances the ‘carrying capacity’ of our planet.* 5. i & ii only 6. ii & iii only 7. all of the above      1. **According to the 2003 paper by McKee et al., which of the following factors are tightly linked?** 2. human population growth, and species richness 3. human development, and beauty of landscape 4. quality of life, and pollution 5. **What are the human mediated ‘local’ factors causing biodiversity loss?** 6. *Land-use changes* 7. *Global warming caused by greenhouse effect* 8. *Pollution* 9. *Resource exploitation* 10. *Ocean acidification* 11. *Exotic species* 12. ii & v 13. i, iii, iv & vi 14. all of the above |   **II. Discussion questions**   1. **Elaborate how the human mediated ‘local’ factors diminish biodiversity.**  |  |  | | --- | --- | | **Land-use changes** | * **Habitat destruction** and conversion of habitat to human use make local organisms homeless or even dead. * **Crop monoculture** restricts biodiversity. | | **Pollution** | * **Water pollution** leads to **‘downstream effort’**. For example, waterborne pollutants like pesticides from a farm field may run into a local river and be carried downstream. Furthermore, **‘dead zones’** with low oxygen level in the ocean caused by nitrogen fertilizers and wastewater disposal kill marine organisms. In addition, manmade hormone drugs discharged in the water destructs water-living organisms’ reproductive function, which is called **hormone mimics.** * **Noise pollution** causes hazards to birds & marine mammals. * **Light pollution** strays sea turtles & birds etc. which causes their death. | | **Resource exploitation** | **Lumbering, overfishing, mining, destruction of seabed caused by trawlers**…all these cripple biodiversity. | | **Exotic species** | * Introduce new species into a place might be good for increasing biodiversity, but in some cases, that can be destructive. * When we introduce a species to a new area, other associated organisms come along as well. For example, if we bring a cow from one place to another, the **parasites** accompany. * Some introduced species can provide new food sources and habitats for native species. But more often, the introduced species compete with the natives. For example, the introduction of comb jelly into Black Sea destroyed the marine ecosystem. They collapsed the anchovy fisheries in the region by eating the anchovy eggs and larvae. * They lack natural controls such as predators or diseases that keep them in check in their native habitats. Another good example of invasives are pathogens that include disease causing organisms like **fungi** or **bacteria** or even **viruses**.   References:  <http://earthuntouched.com/causes-biodiversity-loss-rtr/>  <https://www.khanacademy.org/partner-content/CAS-biodiversity/why-is-biodiversity-threatened/local-threats-to-biodiversity/a/answers-to-the-exploration-questions-local-threats-to-biodiversity> |  1. ***Challenging level (optional*) – Survivors**  |  | | --- | | ***Carrying capacity*** *refers to the population that can be supported indefinitely by its supporting systems.*  *A simple example of carrying capacity is the number of people who could survive in a lifeboat after a shipwreck. Their survival depends on how much food and water they have, how much each person eats and drinks each day, and how many days they are afloat. If the lifeboat made it to an island, how long the people survived would depend upon the food and water supply on the island and how wisely they used it.*  Reference: http://www.sustainablemeasures.com/node/33 |   Imagine that you are one of the survivors in a lifeboat, with the following conditions:   |  |  | | --- | --- | | Population size | 10 people:  You, young couples, a strong man, a pregnant woman, a child, an injured old lady, a doctor, a priest | | Resources available | Water (for 10 people in 20 days)  Food (for 10 people in 15 days)  Fishing tool, 4 paddles, a knife | | Remarks | It takes 30 days to reach the closest island. |  * 1. What would you do for survival?   2. How would you use and distribute the resources? What are the guiding principle(s)?   3. In case it is running out of water and somebody should be sacrificed in order to preserve others, who should that one be? Using theory of values to explain your answer.   4. What are the analogies of this scenario to ‘carrying capacity’ of the planet?   (focus on the concepts of justice and equality when considering the proper use of limited resources. Who will set the rules and who will be the victim when facing shortage issues in the society?)  (Any reasonable answers) |

**(Samples) News Headlines about environment destructions in Hong Kong**

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| Mountains of misery: Tin Shui Wai residents left fearing for safety amid illegally dumped waste The site, near private housing estate Kingswood Villas, was once a green belt but is now a ‘waste hill’.  12 March 2016, SCMP  Source: <http://www.scmp.com/news/hong-kong/law-crime/article/1923535/mountains-misery-tin-shui-wai-residents-left-fearing-safety> |

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| Hong Kong recycling plant set to deal with electronic wastePlans to build the city’s first electronic recycling facility in Tuen Mun are being drawn up in a bid to find sustainable solutions to Hong Kong’s mounting municipal waste problem, where 70,000 tonnes of computers and electrical appliances are thrown out every year. 6 March 2016, SCMP Source: http://www.scmp.com/news/hong-kong/health-environment/article/1921340/hong-kong-recycling-plant-set-deal-electronic |

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| Plastic paradise: Hong Kong’s packaging problemThe city is suffocating under a film of plastic: “Each day the equivalent weight of two A380 Airbus planes is discarded” in domestic waste, says Lisa Christensen, co-founder of HK Clean Up initiative.2 February 2016, HKFPSource: <https://www.hongkongfp.com/2016/02/02/plastic-paradise-hong-kongs-packaging-problem/> |

**Scenario cards**

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| **Scenario 1: Waste dumping**  ‘A construction truck is dumping waste, sludge or sewage in the countryside or into the sea.’ | **Scenario 2: Oil leaking**  ‘Oil is leaking from a ship or from a work site into the sea.’ |
| **Scenario 3: Muddy mess**  ‘A construction site upstream is spewing sludge into a river creating a muddy mess and interfering with the runoff.’ | **Scenario 4: Construction in countryside**  ‘A notice on a district office board or in a country park announcing another “much needed” road cutting through the scarce silver of countryside we have.’ |

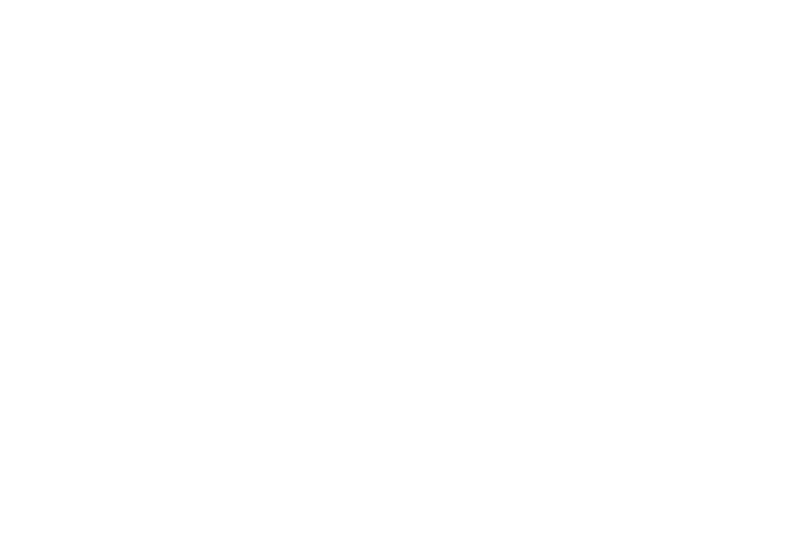
Source: http://assets.wwfhk.panda.org/downloads/eco\_vandalism\_how\_to\_guide.jpg

**Reference:** <http://assets.wwfhk.panda.org/downloads/eco_vandalism_how_to_guide.jpg>



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| **Worksheet 7: Measures for conservation to environmental protection**    Listen attentively to the presentations by all groups. Jot down the suggested solutions, and evaluate their effectiveness in the table below.   |  |  |  |  | | --- | --- | --- | --- | | **Scenario** | **Means to protect our natural environment suggested by the group** | **Comments on the effectiveness of the suggested means** | **Challenging level (optional)**  **Your counter proposal** | | **Waste dumping** |  |  |  | | **Oil leaking** |  |  |  | | **Muddy mess** |  |  |  | | **Construction in countryside** |  |  |  |     Peer evaluation   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | Peer-evaluation (3=good, 2=average, 1=poor) | | | | | **Waste dumping** | **Oil leaking** | **Muddy mess** | **Construction in countryside** | | Understanding of the problem | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 | | Effectiveness of the solutions | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 | | Clarity of presentation | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 |   **Why is environmental conservation important?** |

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| **Why is environmental conservation important?**  **(For teachers’ reference)**  Environmental conservation is important because we have only one planet. The planet is commonly shared by human and all other species. It provides all organisms with their necessities for survival and propagation.  According to ***The Nature Conservancy***[[2]](#footnote-2), serious environmental damage often takes years to manifest obvious symptoms. Environmental conservation seeks to prevent dormant damage via measures including engineering technology, administration/legal, and education/propaganda etc.  **Food chain** preservation - Damage to a small or seemingly insignificant ecosystem often has deleterious effects on many others. For example, if industrial runoff upsets algae growth, it also impacts the creatures that rely on the algae for food. This, in turn, affects the natural predators of the algae eaters. Before long, the entire food chain incurs hardship.  **Fossil fuels** - Non-renewable and highly polluting oil and natural gas are the overwhelmingly consumed throughout the world, which seriously endangers the ecosystem. For example, oil pipelines often destroy important animal habitats. In the event of a malfunction or accident, submarine oil drilling and transportation also pose significant threats to marine animals and the overall aquatic environment.  If we do not adopt appropriate measures to protect the environment and to prevent consuming the resources over the planet’s carrying capacity, both human and other species would suffer at the end.  *(Or other reasonable answers)*  References:  <http://blogsdelagente.com/qijie/2010/09/13/the-importance-of-environment-protection/?doing_wp_cron>  <http://www.ask.com/science/environmental-conservation-important-8051203e35763b4f> |



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| **Worksheet 8: Personality Test.**  For each question, tick the statements you agree with. Then, give a BIG tick for the statement you like best. Repeat for all ten questions.   1. **Whales are in danger of becoming extinct. They have been killed for their meat and oil.** 2. It is wrong to kill whales. They are intelligent animals. We should leave them alone. 3. The methods of killing whales are cruel. We should stop the slaughter until we can find a kinder way of killing them. 4. We must stop whales becoming extinct. We should only kill a few so the species can survive. 5. Killing whales is important to other cultures. We should let other people kill whales if they want to. 6. **Many eggs are laid by hens who live in colony cages. Caged hens have less freedom than free-range hens.** 7. A cage is a prison. Hens should be allowed to live free. 8. We should buy free-range eggs so the hens live happier lives. 9. Large farms can cause pollution. We should keep animals in smaller groups to help the environment. 10. Caged hens produce cheaper eggs. We shouldn’t expect poor people to have to pay to give hens a better life. 11. **Pigs and chickens are kept intensively in sheds to produce cheap meat. They are mainly fed on grains like wheat, maize and soya.** 12. All animals should be allowed outside and given some freedom. 13. Animals suffer in factory farms. We should eat meat from free-range animals. 14. We should eat less meat for the sake of the planet. Then we can afford free-range. It would be better to feed the grains to people. 15. People should be able to buy cheap meat. If others want to pay more for free-range, that is up to them. 16. **Vegetarians don’t eat meat or fish. People become vegetarian for different reasons.** 17. We should live without killing. Animals have a right to life too. 18. We should only eat meat from animals who have been given a good life. 19. We should eat less meat. This would mean more land for wildlife. 20. Meat is good for you and it tastes nice. There is nothing wrong in eating it. 21. **In many parts of the world, people eat cats and dogs. They are often killed very cruelly.** 22. It is wrong to kill cats and dogs. They are our friends. They should be allowed a long and full life. 23. Cruelty is always wrong. These animals should be killed more humanely. 24. We may not like this, but it may be better than eating endangered species like monkeys. 25. I would not like to eat dog, but that is the way I was brought up. People should eat what they like. 26. **Cod is a popular food. So many are being caught that cod has become rarer. Fishing may cause suffering to the fish. They may suffocate osr be gutted alive.** 27. Fish have a right to life too. We should leave them alone. 28. Fishing is cruel. We should find kinder ways of catching and killing them. 29. People should eat less cod until their numbers increase again. 30. Cod is good for you. If you like it you should eat it. 31. **Cloning produces animals with identical genes to their parent. If you clone a cow which produces lots of milk, her offspring should do the same. However, they may also suffer health problems which can kill them.** 32. Cloning animals is wrong. We shouldn’t mess around like this. 33. These experiments cause unnecessary suffering. They should be banned. 34. Cloning means more animals will be the same. Actually it is healthier if they are different. Cloning could increase the spread of disease. We shouldn’t take this chance. 35. Cloning could mean cheaper meat and milk. It’s all right if we do it in a sensible way. 36. **Salmon and trout used to be caught from the wild. Now they are grown in fish farms.** 37. Fish should live free in the wild. They should not be imprisoned in cages. 38. Fish can suffer stress if they are enclosed. Intensive fish farming is cruel. 39. Fish farming causes pollution which hurts wildlife. We should find less intensive ways of farming fish. 40. Salmon and trout are now cheap foods. Fish farming provides jobs and tasty food for people. 41. **British sheep are often sent on long journeys to France or the Netherlands to be fattened or killed for meat. The journeys often take a day and a night and can last for days.** 42. We have no right to make animals go on long journeys like this. Long distance transport should be banned. 43. These long journeys make sheep suffer. They should be killed as close to home as possible. 44. People should eat food which is grown locally. Long journeys in lorries waste fuel and cause pollution. 45. Farmers need to make a living. Live exports means higher prices for their sheep. It also means that people abroad can enjoy fresh meat from Britain. 46. **Organic meat comes from animals who can go outside for at least part of their lives. Their food is grown without using artificial chemicals.** 47. Animals still have to be killed to make meat, even if it is organic. It would be better to eat organic vegetarian food. 48. It is better to eat meat which is organic. It can be kinder to animals. 49. We should eat organic meat. It is a kinder to the environment. 50. Organic meat is more expensive. It is OK to eat, but don’t expect the rest of us to.   **Worksheet 9:**  **Should Animals have rights What rights do animals have?**  Read the following and for each one, answer the questions which follow;  Hi, I’m Barry. You usually don’t see me about. OK, maybe sometimes at night in the dark – but I’ll be scuttling away from you as fast as I can. We live in the sewers – not pretty but it’s a living. Our homes are here, our families – those who manage to avoid you that is. But if we ever come near your homes – the horror! They’ll put down blue pellets for us. Don’t eat them – they expand inside you and burst your guts. It’s a long slow death. I’ve seen it. Trust me. When they don’t do that they sometimes use other chemicals which set your skin on fire. I’ve heard they even use flamethrowers, drowning, and now and again, the old fashioned traps which snap your neck – not always very cleanly. It’s funny being a rat. You even use the word as an insult. But you people, you keep hamsters and gerbils and mice. You clean them, feed them, enjoy watching them running round in their wheels which go nowhere. You hold them in your hand and stroke them. But not us. No. We are the diseased, the unclean. Contagious. We don’t deserve to live – even though it’s your dirt which we clean up for you. Filthy rat.  I have a lovely life here on the farm. I’m in beautiful green meadows all day long, basking in the sun. When it’s cold and grey, I can go into the shed and keep warm. Lots of yummy straw in there to eat. It’s cosy there with all my friends. Though some of the older ones, they’re gone now. They take them to a nicer place. They say it’s never cold there, and that the grass is always fresh - everlasting they say. They say that you should look forward to it because it’s your reward for all your years of giving milk. It’s where you’ll meet your calves. The ones they took there to grow up for when you meet them again. It’ll be good to see them again. I’ve had six of them – one more or less every year. They say that if you don’t have a calf you’ll stop giving milk. That wouldn’t be so good. I remember the names I gave to my calves. Funny enough they were all male. Some of the female calves get to stay here and give milk too. They don’t get to go to the nice place with the everlasting grass – what a shame. There’s even a name for the place we go, sounds very posh… abbatoir. I can’t wait. I wonder if all animals go there……? Questions:  1. Describe the problems facing each animal. 2. When compared with other pets, what rights do you think these animals are being deprived of?   **Worksheet 10: Arguments for or against using animals for food and experimentation**   1. Gather some arguments for or against using animals for food and experimentation at home from friends. (Substantiate your points after hearing your fellow classmates’ presentations)  |  |  |  | | --- | --- | --- | |  | **For** | **Against** | | Eating animals |  |  | | Experimenting on animals |  |  |  1. Role-play: Listen to the viewpoints of the spokesmen. Note down their views, and analyze their stands in the table below.  |  |  |  | | --- | --- | --- | | Role | Attitude towards using animals for food and experimentation | *Challenging level (optional)*  *Your critiques* | | Buddhist | \*for / against |  | | Animal rights activist | \*for / against |  | | Meat manufacturer | \*for / against |  | | Scientist | \*for / against |  |  1. ***Challenging level (optional):* a) Do you think it is possible to value things in a non humancentred perspective? That is, as human beings, can we infer what animals think or feel?**   **b) Some people criticize that we should not bother too much about animal rights because there are places that even human rights are not respected. Attention should be given to this area instead. Do you agree?** |

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| **Worksheet 8:**  ***(For teachers’ reference)***  Personality Test. Assessing Your Score  **How we use animals for food**  Four different philosophical positions  You may well have noticed how this works. The four kinds of statement (a,b,c &d) represent four different philosophical positions.  **Working out your score**  Count how many times you chose a), b), c) or d) as your first choice (ie the statement for which you gave the big tick).  The four positions are as follows:   1. Animal Rights position. Animals should have a right to life, freedom and happiness. We shouldn’t kill them for food or imprison them in cages or pens. 2. Animal Welfare position. We shouldn’t make animals suffer. If we eat animals, we must give them a good life and as kind a death as is possible. 3. Environmental (conservationist / sustainable development) position. We must preserve the earth’s resources for future generations and prevent damage to the environment and wildlife. 4. Anthropocentric (“humans come first”) position. Animals matter and we should avoid cruelty, but humans are more important. We need to look after people first.   This is about values  The four positions represent four different philosophies which are described in more detail over the page.  There is no right or wrong answer. You will find people from all walks of life who believe in any of these. It is a matter of values.  The one you choose most often is likely to be the closest to your position, but you may agree with more than one of these. Most people care about humans, animals and the environment.  **This is about values**  The four positions represent four different philosophies which are described in more detail over the page.  There is no right or wrong answer. You will find people from all walks of life who believe in any of these. It is a matter of values.  The one you choose most often is likely to be the closest to your position, but you may agree with more than one of these. Most people care about humans, animals and the environment.  The four philosophies in more detail:   1. **Animal Rights position.** Animals have a right to life, freedom and happiness.   This is based on human rights philosophy. All individuals matter equally, irrespective of race, creed or colour. Animal rights thinking extend this principle beyond the species barrier. We are animals ourselves. Therefore, if it is wrong to do something to a human, you shouldn’t do it to an animal either.  Animal Rights people are against the exploitation of animals in general. This includes factory farming, long distance transport and inhumane slaughter. They also think it is wrong to kill animals for food and are likely to support vegetarian or vegan diets.   1. **Animal Welfare position.** Animals should live good lives free from suffering. This is based on utilitarian philosophy as articulated by Jeremy Bentham in the late eighteenth century. Animals share with us a capacity to suffer and also for positive feelings or happiness. The priority is to prevent suffering.   Animals welfarists are not necessarily opposed to the killing of animals, provided the animals lead a good life in a higher welfare system such as free-range or organic. Animal welfarists generally oppose factory farming, long distance transport and inhumane slaughter. They are likely to support free-range and organic farming systems which are designed to meet the welfare needs of farm animals.   1. **Environmental/ conservationist/ sustainable development position.** We don’t inherit the earth, we borrow it from our children.   Conservationists are concerned about protecting the planet and its systems for future generations of people and/ or wildlife. Unlike the previous positions, environmentalists may be less concerned about individual animals and more about the survival of species. Diverse gene pools and habitats.  They are likely to encourage people to eat less meat so that more land can be left for wildlife. They are likely to support low input and organic farming systems which reduce or avoid the use of chemical fertilizers and pesticides which can damage biodiversity.   1. **Anthropocentric/ “humans come first” position.** Humans are more important than animals.   Anthropocentrists see humans as the centre of the moral universe. They may oppose cruelty, but believe that where there is a conflict between the needs of humans and animals, humans come first. While there are humans suffering in the world, we should concentrate on them. They may support intensive farming as a practical way of feeding people. They may also see higher welfare production such as free-range or organic as a good thing where it promotes the rural economy. They might support eating less meat if they see this as a better way of feeding the world.  These positions are not mutually exclusive. Most people care about humans, other animals and the environment. There is no right or wrong answer. Your option will depend on your values.  **Worksheet 9:**  **Should Animals have rights What rights do animals have?**  ***(For teachers’ reference)***  Read the following and for each one, answer the questions which follow;  Hi, I’m Barry. You usually don’t see me about. OK, maybe sometimes at night in the dark – but I’ll be scuttling away from you as fast as I can. We live in the sewers – not pretty but it’s a living. Our homes are here, our families – those who manage to avoid you that is. But if we ever come near your homes – the horror! They’ll put down blue pellets for us. Don’t eat them – they expand inside you and burst your guts. It’s a long slow death. I’ve seen it. Trust me. When they don’t do that they sometimes use other chemicals which set your skin on fire. I’ve heard they even use flamethrowers, drowning, and now and again, the old fashioned traps which snap your neck – not always very cleanly. It’s funny being a rat. You even use the word as an insult. But you people, you keep hamsters and gerbils and mice. You clean them, feed them, enjoy watching them running round in their wheels which go nowhere. You hold them in your hand and stroke them. But not us. No. We are the diseased, the unclean. Contagious. We don’t deserve to live – even though it’s your dirt which we clean up for you. Filthy rat.  I have a lovely life here on the farm. I’m in beautiful green meadows all day long, basking in the sun. When it’s cold and grey, I can go into the shed and keep warm. Lots of yummy straw in there to eat. It’s cosy there with all my friends. Though some of the older ones, they’re gone now. They take them to a nicer place. They say it’s never cold there, and that the grass is always fresh - everlasting they say. They say that you should look forward to it because it’s your reward for all your years of giving milk. It’s where you’ll meet your calves. The ones they took there to grow up for when you meet them again. It’ll be good to see them again. I’ve had six of them – one more or less every year. They say that if you don’t have a calf you’ll stop giving milk. That wouldn’t be so good. I remember the names I gave to my calves. Funny enough they were all male. Some of the female calves get to stay here and give milk too. They don’t get to go to the nice place with the everlasting grass – what a shame. There’s even a name for the place we go, sounds very posh… abbatoir. I can’t wait. I wonder if all animals go there……? Questions  1. **Describe the problems facing each animal.**   For Barry the hamster, it lives in a confined drawer and suffers from various tortures in the form of tests such as receiving pellets and experiencing fire and harmful chemicals.  For the cow, she is fed well to give milk for year until she is slaughtered. Frequent pregnancies have been arranged so that she can continue to give milk for years. She cannot take care of her calves because they have been taken away.  *(Or other reasonable answers)*   1. **When compared with other pets, what rights do you think these animals are being deprived of?**   Right to be treated humanely, such as living a life without unnecessary pain and tortures. They are treated as tools to meet the needs of human beings.  *(Or other reasonable answers)*  **Worksheet 10: Arguments for or against using animals for food and experimentation**  ***(For teachers’ reference)***   1. **Gather some arguments for or against using animals for food and experimentation at home. (Substantiate your points after hearing your fellow classmates’ presentations)**  |  |  |  | | --- | --- | --- | |  | **For** | **Against** | | Eating animals | **No ‘animal rights’**  Some scholars (e.g. Carl Cohen) argue that animals have no rights, for only human beings are self-legislative and morally autonomous. Animals lack this capacity for free moral judgement.  **Teleology**  Some philosophers (e.g. Aristotle) believe that ‘nature has made all things specifically for the sake of man’ and that the value of non-human things in nature is merely instrumental. Some animals are raised just for food.  As stated in the Bible, ‘*One person’s faith allows them to eat anything, but another, whose faith is weak, eats only vegetables… All food is clean, but it is wrong for a person to eat anything that causes someone else to stumble*.’ (Romans 14:2 & 20). It allows us to eat all food, including animals. | Animal rights & interests Animal have rights to live, to be free from fear & pain, to eat a natural diet, to live healthy lives without needing medical intervention etc. Deontology Raising and killing animals for food uses them as a means to human gratification, it does not treat them respectfully as ends in themselves. Utilitarianism Raising and killing animals for food is cruel and so reduces the total amount of goodness in the world. Therefore if everyone was a vegetarian, the total amount of goodness in the world would be higher.  **Theory of virtue**  Being generous, kind and compassionate to animals is virtuous.  **Consequentialism**  Eating meat is a significant cause of pollution, because raising animals for consumption requires large amounts of fertilizer and other chemicals and because the animals themselves generate contaminated waste. | | **Experimenting on animals** | Human right Human has the right to live healthy lives without using new drugs which are not tested or proven safe.  Human has right to dominate other animals Utilitarianism Animal experiments can produce great benefits for all mankind but be harmful for just a few animals.  Furthermore, the harmfulness to animals can be minimized by applying the ‘2 Rs’ principles – Reduction (reducing the number of animals used in experiments), Refinement (Refining the experiment or the way the animals are cared for so as to reduce their suffering).  **Theory of value**  The value of human life and health go beyond other animals’. | Animal rights & interests (Same as above)  **Acts and omissions**  Most ethicists think that that it is morally worse to do harm by **doing something** (e.g. harming the animals by experimenting on them) than to do harm by **not doing something** (e.g. not doing an experiment that might find a cure for human disease). Deontology Experimenting on animals is always unacceptable because it causes suffering to animals. Using animals as a tool to find a cure is unethical.  **Consequentialism**  The benefits to human beings by animal testing are not proven. Some cures effective in animal testing may not be equally beneficial for human, or even cause unpredictable serious side-effects in human. |   *(Or other reasonable answers)*  **References:**   * <https://books.google.com.hk/books?hl=en&lr=&id=shSmG2-J7nAC&oi=fnd&pg=PA206&dq=arguments+for+or+against+using+animals+for+food+and+experimentation&ots=FFiYopSTly&sig=QSLNcCK82nj6AKoRBkc9bIVpzvg&redir_esc=y#v=onepage&q&f=false> * http://0-go.galegroup.com.edlis.ied.edu.hk/ps/retrieve.do?isETOC=true&inPS=true&prodId=GVRL&userGroupName=hkioel&resultListType=RELATED\_DOCUMENT&contentSegment=9780737752670&docId=GALE|CX3021100015 * <http://www.bbc.co.uk/ethics/animals/using/eating_1.shtml> * <http://www.bbc.co.uk/ethics/animals/using/experiments_1.shtml> * <https://www.morehouse.edu/facstaff/nnobis/papers/Journal-of-Applied-Phil-Cohen.pdf>  1. **Role-play: Listen to the viewpoints of the spokesmen. Note down their views, and analyze their stands in the table below.**  |  |  |  | | --- | --- | --- | | **Role** | **Attitude towards using animals for food and experimentation** | ***Challenging level (optional)***  ***Your critiques*** | | **Buddhist** | \*for / against |  | | **Animal rights activist** | \*for / against |  | | **Meat manufacturer** | \*for / against |  | | **Scientist** | \*for / against |  |  1. ***Challenging level (optional):* a) Do you think it is possible to value things in a non humancentred perspective? That is, as human beings, can we infer what animals think or feel?**   **b) Some people criticize that we should not bother too much about animal rights because there are places that even human rights are not respected. Attention should be given to this area instead. Do you agree?**  *(Any reasonable answers)* |

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| Worksheet 11 : Summary & Self-evaluation – Biodiversity and conservation  Write down the key learning points of this module.   |  | | --- | | 1. **Instrumental and intrinsic value of nature: maintenance of ecological balance and biodiversity** | | 1. | | 2. | | 3. | | 4. | | 5. |  |  | | --- | | 1. Importance of conservation to environmental protection | | 1. | | 2. | | 3. | | 4. | | 5. |  |  | | --- | | 1. Arguments for or against using animals for food and experimentation | | 1. | | 2. | | 3. | | 4. | | 5. |   **Evaluate how well you have learnt (please put a ‘🗸’)**   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | Very good | Good | Fair | Poor | | 1. Instrumental and intrinsic value of nature: maintenance of ecological balance and biodiversity |  |  |  |  | | 1. Importance of conservation to environmental protection |  |  |  |  | | 1. Arguments for or against using animals for food and experimentation |  |  |  |  |   **What question(s)/area(s) you want to learn more in this module of ‘Biodiversity and conservation’?** |

1. Former US Vice-president, climate change activist and laureate of Nobel Peace Price 2007. [↑](#footnote-ref-1)
2. Refer to http://www.ask.com/science/environmental-conservation-important-8051203e35763b4f. [↑](#footnote-ref-2)