

Life Sciences teaching notes

For the online mode, you must know you have to open different types of forums: discussion questions or, in the latter you should expose situations that encourage students' participation, can be of short exercises, all this will be suggesting to through teaching notes. For this reason it is understood that not every teaching note will be point that opens a forum, because we assume that it will like that; but avoid using only forum doubts because that encourages the student to be very passive and is not involved in the course. Moreover, since the beginning of the course, you can open a related Facebook group, clarifying what use will be this created for in order that students have committed to enter the forums and to this network, if the student chooses it. In the group can share ideas, images, resources, doubts between them; the idea is more interested in getting involved in the course, we mean that they find it attractive for them. We ask you to be proactive and achieve that they stay engaged and interested in the course in order to obtain learning experiences.

Exercise #1 (Forum)

Online Mode Learning Notes:

- The teacher should activate the welcome forum so that the students can introduce themselves and know each other.
- The teacher can also activate the doubts forum where students can get feedback in case they have any doubts.
- Claim when mention the State in which you're, is good to add if you want it the kind of weather, flora and wildlife of the region.
- Remember to the students that the purpose of the first forum is to prepare them for study and to enter the grade's dynamic.

Exercise #2

Online Mode Learning Notes:

- The teacher can give examples of how the table of the functions can be done; if necessary he can draw it so that the students have an idea of what to put in it.
- Encourage the students to find images about monarch butterflies habitat and be descriptive about the bioelements and biomolecules inside your body.
- Teachers should show their students the impact that biomolecules have so that the students can do some critical thinking.

Exercise #3

Online Mode Learning Notes:

- It is important that the students are instructed to put the caption of the image and to add the page from which it was obtained.
- The teacher can give an example of prokaryotic or eukaryotic cells.
- Give examples to the students of the kinds of cells in the human body or other mammals: muscles, hepatics (hepatocits), nephrons (kindey) or bones (osteocits).
- Indicate that the prokaryonte cell hasn't evolved, also give examples of microorganisms that have it.

Excercise #4

Online Mode Learning Notes:

- Indicate that in the common people and in professional athletes like soccer players are very common the muscular cramps, invite them to find out the causes.
- Indicate that the purpose of find out the difference between the prokaryote cells of some bacteria and the eukaryote (like the human being) is to discover the pros of the eukaryote because it's a more specialized cell.

- Encourage them to find the specific name of the “defense” cells in the human organism and the nutrients that are involved in the coagulation and the wound scars.

Exercise #5

Online Mode Learning Notes:

- Indicate the students that the forums are open spaces in which are opportunities of learning based in the contributions of the peers.
- Indicate the importance of review all the topics of the module and to be sure to made all the preparation tasks so their participation in the forum is well fundamented and be useful to make their evidence.

Exercise #6

Online Mode Learning Notes:

- Encourage them to search different images related to the ecosystems.
 - Indicate specific ecosystems you strongly consider or you have seen it in some trip so they can wake up their curiosity.
 - Encourage them to be descriptive and try to find out well defined ecosystems in a geographic place, if they choose jungle, they could find Chiapas’ jungles or the Amazon’s and find information of the specific flora and wildlife; they can choose another place of the world too.

Exercise #7

Online Mode Learning Notes:

- Indicate them the material that they have to collect.
- Indicate the bioelements and biomolecules participation, they are present in the photosynthesis too, indicate that in their presentation or video, they could indicate which are and in which photosynthesis phase they find them.

Exercise #8

Online Mode Learning Notes:

- Provide examples of how the digestion works and its relation to energy.
- Encourage them to represent the hummingbird’s acquisition of energy process, taking advantage of the students’ knowledge they have at this point.
- Indicate that they must be creative to represent the process of acquisition of energy, the one that comes from the Sun, to the one that the living being uses.
- **Remember the students to do the exercise, following the models of solutions of the others exercises of the module, so they can have right to deliver the evidence.**

Exercise #9

Online Mode Learning Notes:

- Guide the students on how to get the traits.
- Guide the students on how to fill in the Punnett Square.
- Include Mendel's bio to catch the student attention, for example his craft: monk, and his scientific qualities: observation, register, discipline.
- It's very important to indicate the students that the exercise like the note indicates it, is symbolic, in reality in the human beings are too many genes in play, the Mendelian Heritage can't explain the result of our features.

Exercise #10

Online Mode Learning Notes:

- Emphasize the importance of mitosis and meiosis since this will help students complete the activity.
- Indicate that it's very common when talking about cellular breathing we need to focus in the necessity of oxygen in the human being, but the focus is other, allow them to deduct it: the acquisition of energy in APT form.
- Indicate that the different types of reproduction are based in the characteristics to mayor or minor variability, you can give examples of this.
- Reaffirm the necessity to make ready to go tasks and go forward in the evidence development.

Exercise 11

Teaching notes for the online mode

- Motivate your students to see and analyze MIT Blossoms lesson to discover how natural selection takes place.
- Although the exercise is online, should be possible that they will have to make the short activity that will be require where they have to spread over the grass or over a green cloth a soup of different colors; you can also suggest other similar activity so they can see how some organisms scape of their predators to camouflage and in that way can survive. The important thing is that they learn about that this differences might occur for genetic mutation in organisms of the same species and might be random.
- In the lesson, you can see resources for you, as it is an online course you might also make a WebEx session in which you can show activities' documents so your students can give their opinion over the questions that have been in the exercise. These documents are:



You Can't Always Get What You Want: A Lesson in Evolution

Julie Boehm
Biology Department
Wellesley High School
Wellesley, Massachusetts

English PLAY

English-Spanish PLAY

Subtitles

Japanese Voice-over PLAY

Video Summary | Biography | For Teachers | Additional Resources

- Teacher's Guide English version (Word format)
- Teacher's Guide English version (PDF format)
- Standards Addressed (Word format)
- Standards Addressed (Word format)
- Activity #1 Lactose Tolerance Starter (Word format)
- Activity #1 Lactose Tolerance Starter (PDF format)
- Activity #2 Modeling Natural Selection (Word format)
- Activity #2 Modeling Natural Selection (PDF format)
- Activity #3 High Altitude Simulation (Word format)

- In the forum ask to the students to make contributions respect to their conclusion about the exercise

Exercise #12

Online Mode Learning Notes:

- Encourage the students to watch the videos contained in the module means, in a special way, they could watch: CrashCourse. (2012, November 5th). He History of Life on Earth - Crash Course Ecology #1[video archive]. Retrieve from <https://www.youtube.com/watch?v=sjE-Pkjp3u4>
- To increase the curiosity in the topic, post scientific founds relative recent of fossils
- Insist to consult the video lesson of the module and present it like a challenge that allow them to evaluate their learning capacity.

Exercise #13

Online Mode Learning Notes:

- Give through homework, examples of some classification of the Species
- Emphasize in the Binomial nomenclature rules.
- Suggest them to find taxonomies of different species for support to solve the activity.
- Encourage the students to watch the videos inserted in the topic explain, because is fun way to learn.

Exercise #14

Online Mode Learning Notes:

- Indicate the students, that in the table, the geographical distribution in the case of the microorganisms (Monera kingdom, protista or fungi) is about a micro systems in which they are often found, host included.
- Encourage them to watch the video inserted in the “killer parasites” explanation, so they can identify the kind of microorganisms.
- Insists them to make the getting ready activities for a best comprehension of the topic.
- Indicate that the science is yet to find more contained substances in the living beings for a possible remedy of many diseases. Increase their curiosity in the information research.
- **Remember the students to do the exercise, following the models of solutions of the others exercises of the module, so they can have right to deliver the evidence.**

Exercise #15

Online Mode Learning Notes:

- Give examples about the Geological Age division on Earth.
- Give the fact to the students of when the first viruses appeared considering the geological eras.
- Encourage the students to read the last topic, make the video selection and consult the videos inserted to increase their knowledge about the structure and origin of the viruses in the geological era context.
- Insists in the importance of the reference of the opinion, to do that they could consult the module means.
- Make questions to allow one discussion expression, based in the topic of the evolution of species; this topic is included in the forum.
- Remind the students when participate in this forum they are fulfilling the stablished criteria, they ease the evidence development.