Science Sauce Online

A source for free flipped learning lessons

Flipped learning reverses the traditional classroom process of "learn it in school, practice at home". Flipped learning involves students learning new content at home through a video, reading, listening or other activity. They then come to class with the foundation knowledge, ready to really engage with the topic. This is a flipped learning lesson with self-study materials and suggested class activities.

Resources for this lesson, including the student tasks, can be found at: **ScienceSauceOnline.com**	Enter lesson code: **01601**

Lesson Topic:

MONOHYBRID INHERITANCE

Age: 14-16

Self study input method: Video

Self study task: Question sheet

Classwork prep time: Near zero

STUDENT PRE-CLASS TASK

- Watch the video: "Monohybrid Inheritance".
- Answer the questions on the student homework task sheet.

IN-CLASS TASKS

"WHAT WOULD OUR BABIES BE LIKE?": Students must imagine a fictitious character and complete the form describing their character based on the following features (**see student handout**):

— eye colour
— hair colour
— height (tall/short/medium)
— Temperament (easy-going/moody/grouchy...)
— Subject strength (science/language/music/art/...)

Once they have their table, they must work with a partner and complete the genetic diagrams for each trait, predicting which traits their son/daughter could have. They must write down what the most likely and least likely outcomes are, and give a description of their offspring, along with details of the job and lifestyle the offspring may grow up to have. Time depending, complete the activity with another partner.
All details are clearly outlined on the student handout.

Note: The traits presented here are convenient examples, but in many cases multiple genes have an influence (and the traits are also influenced by environmental factors in addition to genetic controls). This may be explained to the students, depending on their ability level.

Time (mins)	Students...	Teacher...
2	In groups of about 4 or 5, review answers to the homework task.	Monitors.
3	Review answers (and make corrections if necessary).	Gives answers to the student task sheet.
5	Read the task sheet and discuss with a partner/the teacher.	Gives out the task sheet and answers any questions.
5	Complete the handout, describing the phenotype and genotype of their character.	Monitors students. Gives guidance and ensure students are completing the form correctly.
2	Have a partner check the handout. Make suggestions if there are any errors identified.	Gives guidance where necessary.
20	With a new partner, create the genetic diagrams to establish the possible genotypes and phenotypes of their offspring and create their character descriptions.	Monitors and give guidance where necessary.
10	Join with another pair and compare the descriptions of their offspring. Decide which one is the most interesting. (If completed quicker than expected, students can repeat the activity with a new partner)	Monitors discussions.
10	**Plenary:** Create a question starting with, "What is the probability the plant offspring will be tall if..."* Work with a partner to ask and answer the questions.	Sets the tasks. Explains that tall is dominant and short is recessive in this example. Monitors the discussions.

Examples the students might use are:
- "What is the probability the plant offspring will be tall if both parents are heterozygous short?"
- "What is the probability the plant offspring will be tall if both parents have all recessive alleles.

ANSWERS TO STUDENT TASK

Answers to the student task sheet will be relatively obvious for subject teachers, and can all be found by reviewing the student self-study resources.

Answers are not published here, as these sheets are easily accessible by students. If you need clarification on any of the questions please feel free to email me and I'll get back to you ASAP.

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