Showing off - the art of Communication

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Notes for teachers

Worksheets

Powerpoint

Four worksheets have been devised which teachers may find helpful as follow-up exercises to lessons. Worksheets 1 and 2 are perhaps more suitable for the GCSE Foundation tier and worksheets 3 and 4 for the Higher tier. `Suggested` answers are provided below.

Worksheet 1- the life cycle of ladybirds

1. egg 2 weeks, larva 8 – 9 weeks, pupa 2 weeks, adult 36 weeks [allow answers ± 1 or 2 weeks]

2. i) 5 – 6 times

   ii) [see student graph]

   iii) as the temperatures increases, the time for development decreases – the decline in the development time as the temperature increases is not constant – the decline falls steeply from 15° C to 20° C, becomes less steep and between 30° C and 35° C is very small

   iv) instar

3. iii), iv), v), i), ii) (However, the ladybird continues to get darker red for several weeks after its first flight)

4. i) carnivore

   ii) roses, cabbages, fruit trees, oak trees, lime trees, etc.

   iii) along any leaf vein – alongside any leaf vein is the most suitable place as the aphid could then tap into the leaf system for its nutrient requirements

Worksheet 2 – ladybirds as predators

1. an animal that catches, subdues, kills and eats other animals

2. when the larvae emerge from the eggs they will have food readily available, grow more quickly and reach the adult stage sooner – by laying near to aphid colonies ladybird females maximize the chances of their offspring reaching food fairly quickly and reducing the time spent searching for food

3. light, gravity

4. a positive taxis occurs when an animal moves towards the source of a particular stimulus in response to its intensity - a negative taxis occurs when an animal moves away from the source of a particular stimulus in response to its intensity

5. move away, drop off the plant, kick out at the ladybird, pull free from the grip of the ladybird

6. vertebrate predators: swallows, swifts, blue tits and any other members of the tit family, etc.

7. fly away, drop off the plant, clamp themselves to the surface of the plant they are on, present their elytra to the predator, jump off the leaf

8. i) a) visual signal ii) d) an odour (smell) signal

   ii) it also gives off taste signals and touch signals

9. i) an organism that lives in or on the host species and from which it obtains food or shelter

   ii) it would limit its source of food, it might not be able to complete its life cycle and it is detrimental to the host

Worksheet 3 – Aposematism in domestic chicks

1. 58 seconds

2. 130 seconds

3. [see student`s answer]

4. chicks were more reluctant (i.e. took a longer time) to peck at the grains when they were clumped than when they were spread out – the mean latency for yellow grain when clumped was nearly double the time when spread out but for red grains it was 1.5 times as much – the mean latencies for the red grain set-ups were greater than for the yellow grain set-ups

5. clumping increases the latency to peck so clumping the grain has a greater impact on the chicks, or is scarier for the chicks

6. red grains increase the latency to peck in comparison to yellow grains, so red has a more powerful effect on the chicks

7. to make the test chick behave in a more `natural` way – to decrease the stress for the chick when it is placed in the test set-up, which would be unlike their rearing cages

8. the packet is likely to have bands of red, yellow and black colours

Worksheet 4 – colour patterns in adders

1. adv: cheap to use, easily shaped, can add markings easily, the beak marks of a bird will be left on the plasticine

   disadv: may not look very convincing as a snake to a bird, plasticine may have a smell that a bird may be able to distinguish from a real snake, models would be immobile

2. iv) aposematism

3. i) to control for length

   ii) to control for shape, to make the models `snake-like`

   iii) the bold zig-zag pattern down its back

4. a sit-and-wait predator is one who ambushes its prey, it does not stalk its prey but waits for it to come within reach and then grabs it

5. it would mean that its presence would not be easily detected by a prey animal and so it may come close enough for the snake to strike and grab it

6. iii) The scientists wanted the white card to act as a control for camouflage.

7. to control for the effect of a bold zig-zag pattern

8. i) accept any answer in the range 5 – 5.5 %

   ii) terracotta models on white card

   iii) plain models suffered more attacks than did ones with the bold zig-zag no matter what the background, plain models of grey plasticene suffered a similar % of attacks whether on a natural or card background but the discrepancy was greater for terracotta snakes with a greater number attacked on natural backgrounds, the % of attacks on models with zig-zags was similar for those on natural backgrounds and was also similar for those on white card though the % of attacks were smaller for models on white card

9. predators would attack the head end of the models more frequently since a snake`s major weapon is a poisonous strike with its fangs, a predator might strike a snake on any part of its body to check it was a snake but would always the peck its head area to nullify its dangerous head and fangs, it would preferentially strike the head end to kill it to make it less likely that the snake would attack the predator

References

Here are some suggestions for books and websites that may be helpful.

Books

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Websites

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