Activities in Biology

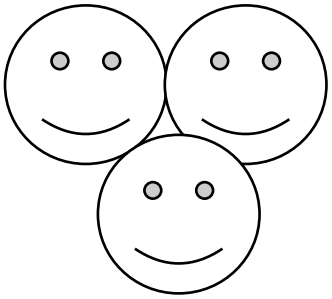
Type: Problem Based learning in GENETICS

Rationale

Genetics is a topic taught at form four levels in the Kenya education curriculum. Majority of teachers perceive the topic to have few practical activities and hence engage in theoretical teaching. This activity aims at helping teachers integrate the Project Based Learning (PBL) strategy and demonstrate application of concepts learned in the topic genetics to real life. Knowledge and skills in genetics find application in many real life situations. This includes in health care research, plant and animal breeding etc.

Fingerprint Activity

In this activity the teacher uses a scenario to teach the **concept of fingerprints** and the **application of that knowledge in real life.**

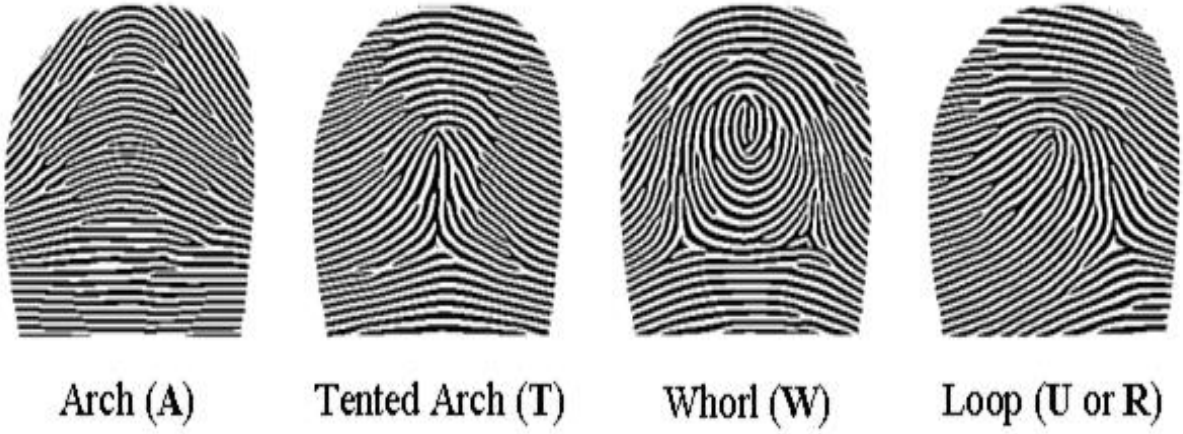


Scenario

A student sneaks into the school principal's office and steals a mobile phone. In the event, they also drink a glass of juice that was placed on the principal's desk. The principal's secretary reveals it was a form four North student but could not recall the name or the face. The Form Four North teacher of biology sets to 'investigate' in an attempt to find out who the learner was.

Resources

Diagrams of the four basic fingerprint types, hand lens, ink pad



Procedure

a. All students in form four north, use the stamp ink pad to take their right hand thumb print.

b. They imprint the thumb print on a 6'*4' small photo paper and give each a 'secret name' that they are expected to remember. The teacher also has their finger print also done and indeed, it is the one given out as the 'juice thief'

c. The teacher mixes the prints and distributes them equally to the student groups. (*e.g., if **40** students are in class and in groups **8** groups, then each group gets **10** prints.* He also gives the possible print of the 'thief' as identified by the 'police'. **Note the teachers print is the 'thief' that her learners were expected to identify*

d. The students, using the hand lens and pictogram of the four possible fingerprint whorls, compare the prints given to their group and 'identify the juice thief' by elimination using the print of the 'juice thief 'as given by the teacher. The lens is used to magnify the prints.

Possible Outcomes

The students could come up with mixed results. Some claiming they have identified the 'juice thief'; isolated suspects that could possibly be the thief; some could claim the 'thief' is not in their group etc.

What kind of discussions can a teacher and learners engage in this activity? Where in real life have learners experienced where finger prints are used: identity cards, identification of people in crime scenes and dead people in morgues, banking and air travel biometrics etc.

Biology teachers could use this fingerprint scenario activity to demonstrate steps in PBL process which could include

- Problem presentation:
- Inquiry into the problem:
- Prepare a report
- Make presentations
- Evaluate and then review (with help of the teacher - to clarify misconceptions).

PBL strategy is a learner centered approach that provides an opportunity for in-depth individual and collaborative study, application of knowledge, skills and attitudes required in the 21st century classroom.