

Life' sTEAM 33

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Why Life' sTEAM 33? It's about explore and discover with my student's team from 33 Secondary School Galati the complexity and connections between life processes in a STEAM way.

STEAM is an excellent teaching approach to science disciplines because:

- brings the knowledge closer to the reality around us - stimulate students to find multiple solutions to real problems
- stimulate creativity - through art, storytelling (puppets and shadow theatre), crafting using recycled materials, students can create different designs
- encourage collaboration –they assume different roles within the teams and take advantage of each others s talents to achieve the proposed goal

With the help of bacteria and yeast, students **engineered bread and yoghurt**. They **investigated the role of "good" bacteria and yeast**, choose and mix the ingredients, discover the importance of temperature in production process, **discover their important roles in nutrition and** presented conclusions in the front of their schoolmates They collaborated in order to have the best bread and the most delicious yoghurt. After the presentation they "eat their homework".

Photosynthesis, pollination are not just plant functions but also important ecosystem services on which depends life on Earth. These are complex processes who need outdoor activities, investigations in order to understand the role in maintaining the biodiversity and life on Earth.

On this topics, through STEAM lessons, students can use their sense of observation, collaborate, find interesting informations, make nature observations, develop their abilities in order to understand connections between structure and function and the role of ecosystem services on the Earth.

- Observing the shape of different types of leaves in order to explain the importance of leaf form in absorbing light
- Crafting process of photosynthesis using coloured paper to illustrate light energy and the products (oxygen and glucose). I explain using usual terms: when prepare food, we need

fire (a form of energy) and ingredients (reactants) . In this case, is about light energy, water and carbon dioxide. Then, plants make products as the different dishes in that meal.

- Representing the role of photosynthesis as ecosystem services using drawing, online application like StopMotionAnimation, Bandicam.

For pollination, we visited the Science Museum Galati where students investigated the different roles of the bees in the hive and the main products of the bee: beeswax, honey, propolis. Every students played a bee role and participated at a storytelling activity about role of pollinators in maintaining biodiversity on Earth. Some of the students expressed their interest to design process of pollination in Minecraft and Scratch programs. They also crafting for promoting NATURA2000 network (National Park Macin, Romania)

Journey into the world of sense with GoLab – For Sense Unit I used GoLab platform which is based on building ILS (Inquiry Learning Space). The aim of the ILS is to provide students with an opportunity to conduct scientific experiments, guided through the inquiry process and supported at each step. In dedicated ILS from GoLAB, teacher introduce materials and tools in order to guide students on specific topic. Teacher has the possibility to check in real time the completion of the work tasks by the students. For investigation stage, students have the opportunity to experiment in virtual laboratories. Students craft human eye, following the instructions presented. In this way, specific terms discovered in the lessons are also fixed, in a practical way.

”How my body work?” is a complex integrated activity which involved biology, physics and physical education and where each team had to choose one favorite sport, take pictures during the game and process photos in order to identify levers and explain mechanical advantages. Through integrated STEAM approach students developed an ecofriendly activity (were used recycled materials), designed robotic hands, jumping–jack puppets, puppet theatre, online presentations using online platforms or applications.

“Black2GreenCarbonFootprint” was a a campaign where our students developed various activities based on reducing our carbon footprint. They used footprint calculator, collaborated with EPA Galati specialists, designed climate change dioramas, recycled socks puppets and played different roles, created a shoes garden.

Conclusions:

- STEAM activities are challenging and helps to understand the life processes

- Allow using of simple materials, online or onsite, outdoor or indoor, at school or at home, at any level or age
- STEAM approaches are perfect opportunities to reach 21st century skills - the 4 C s (Critical thinking, Communication, Collaboration, Creativity)

Solutions will come from creative and curious people who are willing to do things differently.

Act aS TEAM!