RAISE
Raising awareness and interest in STEAM Employment

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PROJECT NUMBER
2017-1-MT01-KA202-026978

ACTIVITIES TEMPLATE

Title	Science Career Storytime
Subtitle	The Biologist , The Engineer, The Chemist and The Teacher
Target group	4-7 year olds
Objective(s)	- To help children identify with characters in the stories related to STEM careers (Science, Technology, Engineering and Mathematics) - To humanise scientists and professionals working in the STEM field - Engage children by participating in STEM-inspired activities
Summary	This resource is designed to facilitate the reading of stories about people who work in STEM fields. These individuals are just like any other person, with families, friends and hobbies who simply have a passion for science, are doing their own part to contribute to this world with their skills, and who hope to inspire children to one day follow in their footsteps. Following the reading of the story/ies, simple STEM activities have been provided to build on the narrative and to compliment the skills and activities that such a career might entail at the most basic of competences.
Materials	- Story of a STEM professional - Illustrated image of professional to compliment the story - Activity Guide related to story
Preparation	- Time to purchase and prepare resources for hands-on activities activity - Setting up a Storytelling Space such as an open space with cushions.
Duration	60 minutes
Description	Method: 1. Set up a space where everyone can listen to you reading the story. 2. Show children the image of the STEM professional 3. Ask them to notice things in the image, to try and guess who the story is about. 4. Ask the children what they think that the person does or likes. 5. Read through the story with your class or group 6. Follow up the story with a hands-on activity inspired by the character in the story.

HEND ABEIDI: THE CHEMIST

Once there was a girl called Hend who lived in a beautiful country called Libya where she shared a house with all her brothers and sisters. She loved going on adventures and watching the beautiful sunset while she was swimming

She was a curious child, and spent hours looking at the world around her and she asked a lot of questions! But her family and friends could not answer them all. So she was patient and she read…and read…and read…and tried to discover the answers to all her questions.

As she grew older she tried out experiments of all sorts and fell in love with Chemistry. She discovered she was fascinated by how the air was changing and, in some places, getting dirtier and dirtier. She wanted to understand why this was happening to make the world a better place.

She now works as a researcher at the University of Malta to learn more about pollution. In her work she studies how our air is becoming less clean and how certain things we put in the air are making us unwell.

She dreams of helping to save our planet and believes that you can anyone can dream big. If you work hard and find people to help you, maybe you can make these dreams come to life.

Illustration of HEND

CLASS ACTIVITY - THE CHEMIST

Purple Cabbage Juice – Investigation

Description:

- During this activity, students will be able to investigate basic chemical reactions of acids and alkali by using an indicator.
- Colour changes accompany these interactions, and this is because some materials are acidic whilst others are alkaline.
- The different properties of these materials will give the indicator a different colour.
- Indicators help scientists follow reactions which they cannot observe with the naked eye.

Materials required:

- Purple Cabbage
- Juicer or blender
- Sieve
- Testing liquids/powders: Lemon Juice, Egg, Vinegar, Baking Powder dissolved in water.
- Cups
- Colouring pencils

Method:

The preparation of the indicator can be carried out prior to the storytelling activity, or together with the group of children as part of the hands-on activity itself.

1. Chop up the Purple Cabbage
2. Add water.
3. Boil or blend in a blender for a few minutes.
4. Sieve out the purple liquid.
5. The purple liquid is the Cabbage Juice. It is what you will be using to test out different liquids for their properties.

Testing different liquids:

- Distribute purple liquid depending on how many kids will be conducting the experiment. Always use a fresh cup of cabbage juice to test your materials.
- Allow students to explore mixing some of the liquids to each cup of Indicator/Cabbage Juice
- Ask them to observe how the colour changes in the cups.
- What do you notice? How many colours can you observe? What happens when we mix them?

Additional Skills:

- To highlight another skill in the activity, you can encourage children to mix testing liquids together with the cabbage juice by using a pipette. This encourage kids to use their fine motor skills.

- Another skill which can be included, especially for older kids participating in the activity, is that of measuring out a specific amount of liquid and cabbage juice.

  a. This can be done either by asking kids to add a *specific number of drops of indicator juice* to the testing liquid by using a pipette.
  b. or by asking them to pour specific amounts of liquids in measuring into cylinders.

  Both activities encourage kids to be precise and to pay attention to detail, both of which are skills needed by chemists.

ALBERT SCIBERRAS: THE TEACHER

Albert is a boy from Malta; he was a good boy but sometimes he got in trouble for riding his bicycle a little bit too far away from home! He also loved fixing and testing things out around the house when he was young.

He loved learning about how stuff works and was his happiest when he had a challenge to solve. His dream was to work on engines… car engines, plane engines…any kind of engine! So, he decided to become an engineer.

But when he grew up he realised that engineers did not just work on engines, so he thought long and hard about what else he loved most in life.

He remembered how wonderful his school teachers were and how much they had changed his life. They had helped him learn so many interesting things.

This made him think that he too could do just that. Yes! He could become a teacher! He would share his love for science with kids just like his teachers had done.

He is now a teacher and loves being able to figure out the most difficult of challenges with his students. He is very proud of being able to help students to achieve their dreams and to help them grow up to become amazing human beings.

Illustration of ALBERT

CLASS ACTIVITY - THE TEACHER

Role-Play: Being a teacher for a day

Description:

- During this activity, kids will have the opportunity to create their own mini classroom.
- The aim is for kids to have fun acting as though they're teachers, whilst highlighting what teachers do and which skills are needed.
- Children can practice communication and listening skills.

Materials required:

- Papers
- Pencils
- Colours
- Books
- Cushions
- Whiteboard
- Markers
- Toys
- Timetables
- And anything else that you have in the room which can used by a child to act like a teacher!

Method:

- Ask children what they think teachers do and what they like best about teachers.
- Tell the kids that they're now going to pretend that they are teachers!
- Let their imagination run wild and encourage them to create their own props.
- Older kids can also create activities to carry out with other children in the group to 'teach' them, help them to learn something.
- Highlight certain skills needed by teachers, such as being able to speak to other kids, listening to what everyone has to say, and the fact to you have to be patient and nice!

DANIEL MANGION: THE BIOLOGIST

Daniel was kid who loved going on adventures and always had plenty of energy to explore the garden outside of his house. He spent hours and hours outside in the countryside observing how the wind moved through the trees and listening to birds as they sang their songs.

He loved to collect all sorts of things. He collected stamps, shells, bottle caps, crystals and pebbles. Anything that you can think of! He wanted to find out everything about anything around him and spent time investigating how it all worked together. It was then that he fell in love with biology!

He then fell in love with biology and found out he really enjoyed working with plants!

His teachers thought he would be great working in the lab and he discovered he loved it to. He is learning more about how many different daffodils (Narcis) there are in the Maltese Islands. His job is to find out which flowers look very much the same or different to each other. He then uses this to help him put them in order. The work he does might in the future help find medicines that could help us if we are sick.

One day he wants to become a researcher in a museum or a botanical garden to explore and learn more about plants from all around the world.

Illustration of DANIEL

CLASS ACTIVITY - THE BIOLOGIST

Symmetric Plant Paintings

Description:

Children are encouraged to make drawings inspired from plants, ferns and flowers that are symmetric.

They will draw only one half of their drawing and fold the paper in half to create a mirror image on the other side.

Children will then share their paintings and work in teams to help organise them based on similar features, same colours to mimic a very basic taxonomic/grouping exercise used by botanical scientists.

Materials:

- A4 sheet of paper or bigger
- Watercolour or water-based paint
- Brushes
- Images of plant to draw versions of
- String and Clips

Method:

- Show students an image of a particular plant or insect.
- Ask kids to fold the paper in half to have a folding line ready.
- Have kids draw their own version of the symmetrical being with their colours on one side of the page.
- Using the folding technique to obtain a symmetrical painting.
- After the kids what their painting represents.

After creating their artwork:

- Ask each child to present their painting to the rest of the group.
- Place all the painting in an open space and ask children to note the similarities between each painting.
- Highlight the fact that just like botanists, participants need to pay attention to detail and need to use their organising skills.
- Ask children to group painting according to their similarities.
- Children have to give reasons as to why the paintings have been grouped in a certain way.

As the workshop presenter you can let the children freely group them depending on how they think it's best, or else to group them according to their colour or shape.

Make the activity as difficult as you would like, to challenge the children to see patterns and collections.

MICHAELA ZAMMIT LA ROSA- THE ENGINEER

Michaela was always a curious girl who would not stop asking questions as a child. She once was so curious that she ate a whole grasshopper!

She loved her grandpa very much. He was an engineer. She loved that he knew so many things. He was very good at fixing things that had stopped working.

She wanted to learn as much as she could and be just like him! She spent days watching him. Working on fixing different toys and electronics, she was overjoyed when they could get them to work again.

As she grew up she became fascinated with science and mathematics. She was determined to learn more and more. And she never stopped asking: But why?

So she decided that she too wanted to become an engineer and now works on large aeroplanes. She spends her days in a hangar which is always buzzing with activity and excitement.

Her job has to do with making sure that planes are ready and safe to fly and to transport people all around the world. She loves bringing new ideas to her job and working with a lot of people to make sure things get done well.

She dreams of travelling around the world and wants you to know that if you believe in yourself, you can achieve anything that you want.

Illustration of MICHAELA

CLASS ACTIVITY – THE ENGINEER

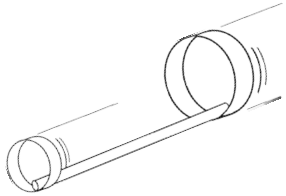
Making Flying Machines

Description:

In this activity children will be encouraged to build their own glider and to observe how it can fly. They will be incentivised to see how the flying pattern changes by changing the size, material and shape of the glider. They will work as a team to help document their observations and help each other investigate any questions they might have.

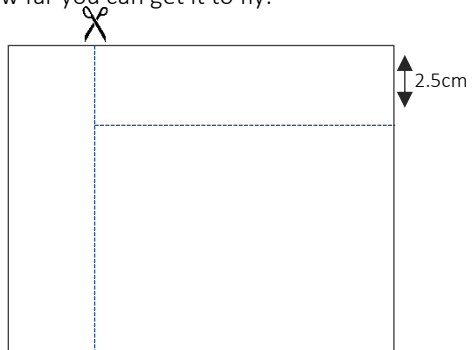
Materials:

- A4 Sheets of Paper
- Drinking Straw (Paper)
- Ruler
- Scissors
- Tape (Paper)
- Pencil



Method:

- Cut 2 strips of paper which are about 2.5 cm wide.
- One strip should be the length of the paper and the other strip should be as long as the shorter end of the paper.
- Overlap the two ends of the strip of paper and hold together with tape.
- Use tape to stick the paper loops to both ends of the straw.
- Make sure the straw is on the inside of the loops.
- Hold the straw from the middle with the hoops on top and throw it in the air. How far did it go?
- Practice and see how far you can get it to fly.



Testing out the glider:

Try out some of the challenges below and note what you observe:

- What if we change the length of the straw?
- What if we change the size of the hoops?
- What if different sized strips are used?
- What if strips of different width are used?
- What if different kinds of paper are used?
- What if the hoops are placed at different points on the straw?
- What if more hoops are used?

Observe and document what happens differently than your first glider in table.