STEAM Tales

Stories of inspiring women in STEAM:

Rose Dieng-Kuntz

Prepared by LogoPsyCom

LogoPsyCom

Project Title

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Partners

MIND (Germany)

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Rose, the desert flower and digital mind master

A genius is born

In 1956, under the burning sun of Dakar, a bright girl named Rose was born as one of seven siblings. Her father, whose mother could not read or write, encouraged his children to have a great education. Even though she was very serious, Rose was still scolded once by a teacher for not paying enough attention.

Back then, Senegal was slowly becoming independent from French colonisation, which means that France used to have control of everything in the country and Senegal was now taking that control back. But a lot of people still believed that African students were less intelligent.

How would you feel if you were told that education is extremely important, but that the way you were born means you are automatically less intelligent? That seems wrong, right?

Luckily, in Dakar, people started to organise a lot of intellectual activity, like debates and discussions. Being exposed to many different ideas from a young age helped Rose develop a great passion in how people learn and share information.

Question for children:

Do you ever ask questions or learn from other people? Do you like discussing and learning new things?

But even if her family supported her, Rose still struggled because many people thought that black people were less clever and in Africa, young girls were told they didn't need education because they wouldn't get a good career.

The curious black cat

But she was determined to prove them wrong. Rose had a passion for understanding how the world works and spent hours observing nature, her brown eyes twinkling with wonder and excitement. She loved experimenting to test her theories and disassembling or building gadgets. Her adventures evolved into a deep passion for science and mathematics that her parents celebrated. They provided scientific kits and books and often discussed her questions and discoveries, showing her the importance of knowledge and hard work and how they can make the world better.

Question for children:
Do you wonder how the world works, how certain things happen in nature, how certain items work, etc?

As Rose grew up, she became known for her attention to detail and for chasing knowledge everywhere she could. By the time she reached high school, she was top of her class in mathematics, French and Latin. She was smart not only with science but also with languages, and she dreamed of becoming... a writer!

But one day, she received life-changing news: she'd earned a scholarship from the École Polytechnique in Paris, the most prestigious engineering school in France! There, she could learn from some of the best professors and maybe become a great scientist!

Question for children:
What should Rose do? Should she enrol in that great school and have a scientific career or follow her artistic dream and try to become a writer instead?

A new adventure

Her heart was racing with excitement and doubt: science and art were both her passions... How could she choose? She knew this opportunity would only happen once because not many people in her country had that chance. But that wasn't the only issue: she had to make the difficult decision of leaving her family and moving to France, a faraway land, all on her own, as the first African woman to enrol in the École Polytechnique!

Question for children:

Can you imagine having to leave your home and family to move to a foreign country with a completely different culture, all by yourself, to reach a goal? Would you do it?

Determined, the young genius travelled where she would have more chances to succeed, but she also knew that she would face some struggles. She worked hard to prove that she deserved this scholarship, but even if her grades were excellent, she still sometimes faced negative judgment because she was black and a woman. She had trouble fitting in, like many women and people of colour did at the time, and still do, especially in science and technology, which was mostly done by white men.

Question for children:

Do you think it's fair that people treated her negatively because she was a black woman, even though she was smart enough to get a scholarship from a highly respected school?

Lovely and loved

Thanks to her brilliant brain, she was able to make herself and her family proud, as they had always given her the will to learn and make the world a better place. Her community helped her fight for diversity in scientific research: she wanted to make sure that people with different origins, skin colours and genders could be heard and involved in science. For Rose, it was really important that different people could share their ideas and points of view.

Question for children:

Do you think it's important, when learning things about the world, that people of different origins, genders and views, can share what they think and explain what their life is like? Why do you think that would matter when trying to understand the world?

A brain and a heart

Even if people still judged and doubted her, Rose earned the right to join the great academy to study telecommunication, to learn more about how people share information through technology. She chose to specialise in artificial intelligence, which combines science and language by creating computer programs that can think, learn and talk almost like humans do.

But she hadn't given up on her artistic interests: while studying, she became passionate about opera and participated in the theatre club as an actress and singer in the school play! She was also interested in psychology, to understand how humans act and think, and how technology is used to help people.

Thanks to her determination to prove her worth, she decided to show future generations of scientists, especially girls and black people, that they could achieve great things. She wanted more diversity and representation by involving and showing many different people in the scientific world.

Question for children:

What do you think diversity and representation mean? Why would they be important for someone like Rose?

A blessing and a curse

Rose knew she had been lucky to receive the scholarship, which allowed her to be the first person in her community to study in one of the most prestigious engineering schools in the world! But she had to work hard under the pressure: she was a strong and brilliant woman, but still a human with doubts and fears too. She sometimes missed her home and worried about losing what she had worked so hard to build.

Question for children:

Can you think of a time you worried about failing at something even though you worked hard and did your best? Don't you think it's good or necessary to make mistakes and struggle so you can learn and become better?

A symbol of progress

Being a woman in a field that mostly involved men, black in a mostly white country where racism was very present, studying difficult topics and torn between sciences and arts... Rose battled with many obstacles and expectations. But thanks to her cleverness, hard work and caring personality, she became a respected figure in her field. She was also kind, friendly, full of positive energy and great at collaboration, which helped her lead working groups with students, educators, and even big companies!

With the support of her community, Rose had become a symbol of her country. When she was just 21 years old, the French President, Valery Giscard d'Estaing, a former student of the École Polytechnique, invited her to a summit in her hometown of Dakar. Seeing where she had come from and what she had achieved was an incredible experience!

Question for children:
How do you think Rose felt when she came back to her hometown after everything she'd achieved despite the negative judgments and struggles she faced?

The leader of change

She had proven that she could accomplish her goals! So, she decided that she wasn't just going to be good at her job: she was going to improve her field as a whole!

Through her studies of telecommunication, she discovered a common question: how can computer science help humans reflect and think? Technology was rapidly evolving: all information could be recorded and shared. Scientists started wondering how a specific piece of information could be found quickly in that mountain of data. You might understand that issue if you know about the Internet and how many different websites exist!

Rose took on the challenge of answering that question. She believed that knowledge needed to be "saved" to avoid being lost, so she used everything she had already learned and improved how information could be accessed!

One day, Pierre Haxen, the founder of Ilog, a big software company that helped many businesses, invited Rose to join the INRIA (National Institute of Research in Informatics and Automation). He had witnessed her winning all the first prizes during an event a few years before and knew she would put her genius to great use! She accepted and started working on projects related to artificial intelligence: creating machines and programs that help humans think, understand and solve problems.

Question for children:

**What do you think artificial intelligence is?
What is it used for?**

Rose turned her passions into real inventions and showed her leadership skills too: for 14 years, she was the leader of the project ACACIA, which helped find information through technology. She took on many challenges with success and was the second woman ever to lead a research project at the institute, proving yet again that those who doubted her were wrong!

Rose led the development of tools that represent information within a machine. Her idea was "a web of knowledge linking individuals, organisations, countries and continents", basically the origin of the internet that we know today. She also worked on ways to share language through symbols and visuals, which are used today in many companies and factories, to identify the root of a problem in a series of events, like finding a mistake in a chain.

Question for children:
Did you know that companies that make planes or cars, like Renault, used Rose's discoveries to improve their products?

Thanks to her very human and intuitive way of thinking, she and her team explored what she called the "semantic web", which shows links and connections between information, to exploit, represent and share knowledge as a collaborative and social structure that anyone can use. It's just like Wikipedia, where anyone can find information that other people have shared online and see or create links between different topics and ideas.

Admired and celebrated

Besides being picked by the President and by specialists in these fields, she also earned multiple awards: she received the Irène Joliot-Curie Prize, granted by the French Research Ministry to the most brilliant women scientists. And a year later, she became a Knight of the Order of the French Legion of Honour, which was almost always only given to men for almost 200 years!

A hero but a human

Rose was praised all over the scientific world and was the pride of her country. She had reached the top and explored horizons that people like her weren't allowed to at the time. But there were still many people who didn't believe in her, and she was far away from her home, with the pressure, expectations and fear of disappointing her peers...

Question for children:

How would you feel in that situation? Would you feel doubtful, worried or pressured, or would you feel determined, focused and ambitious?

One in a million

But even if she had doubts, Rose was still confident in what she was capable of. She proved that she could succeed where many people thought she couldn't and even conquered her field of studies, above most scientists of all genders and origins!

She was one of the first scientists to recognise the potential of the Internet as a tool for sharing information! She made incredible discoveries that affected the way we use the Internet and are still used by many people, inspiring many others to pursue careers in science and technology!

From a curious kid to a genius icon

The little girl from the desert who had once been scolded for not paying enough attention in class had become a specialist in various complex fields, publishing papers that many praised for how innovative they were. She showed the world that even someone like her, judged for her origins and identity, could reach incredible goals and go further than most!
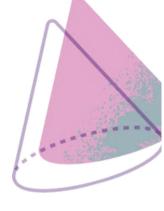
The first African woman to enrol in the most prestigious engineering school in France, the second woman to lead a research project at the National Institute, a leading figure and inventor in AI technology, knowledge management and the semantic web...

After spending her life trying to bring her community upwards and inventing, spreading and sharing many methods, tools and concepts that have become very important all over the world, she passed away in 2008 at the age of 52.

But Rose's memory and legacy live on: she is now a symbol of hope for new generations, especially girls and women of colour. She showed that if you work hard, stay curious, kind and passionate and prove, to yourself and to others, that you are more than how you were born or what others think of you, then you can accomplish amazing things!

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