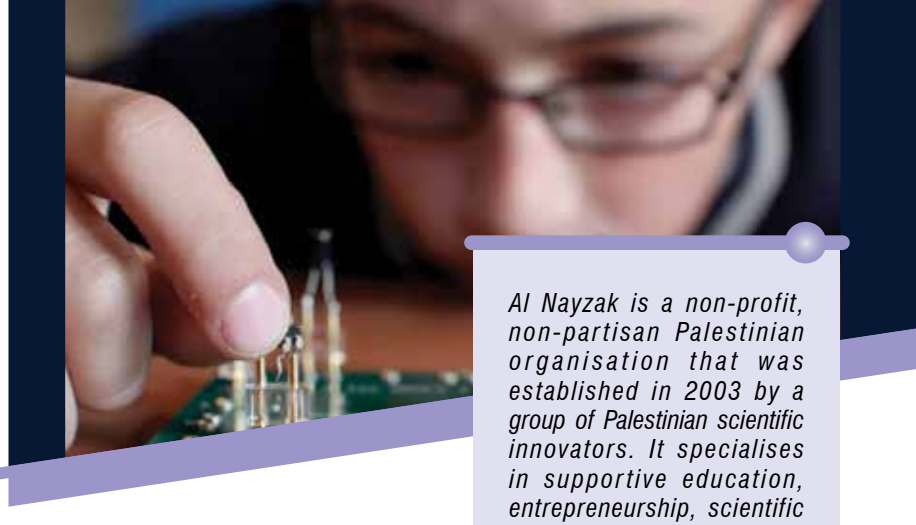
Because We Know How to Make Dreams Come True!



Al Nayzak is a non-profit, non-partisan Palestinian organisation that was established in 2003 by a group of Palestinian scientific innovators. It specialises in supportive education, entrepreneurship, scientific innovation, and research and development. Al Nayzak's five branches are located in Jerusalem, Ramallah, Nablus, Hebron, and Gaza, in addition to its Science and Technology House (museum) in Birzeit's old city.

By Eng. Aref F. Husseini

Abandon your fears, listen to your passion, explore the depths of science.

Reach the sky with innovation.

One day I asked my mother the question I ask every year: "What do you want for Mother's Day?" And she gave her usual answer: "I only want you to be happy." This answer meant that I had to make an effort to think about what gift to give her. After a few moments of silence following the ritual answer, however, and in a timid, kind, and humble voice, she spoke. Aha! She started to talk about computers, software, Skype, Viber, WhatsApp, and free-of-charge long-distance communication; I realised that she wanted a smartphone!

My mother, in her seventies, has never wanted to have anything to do with science and technology, but somehow she has now discovered that she needs a smartphone. So when I asked whether she wanted an iPhone or an Android, she inquired about the difference between the two but ultimately left the choice up to me.

This change in my mother's attitude toward technology reminded me of her astonishment when I made a major shift in my career to establish Al Nayzak Organization for Scientific Innovation. Back then she wondered: "Why?" My answer: "To build a generation that produces rather than consumes science and technology." Ten years ago, when this project took its first steps in Jerusalem before spreading all over Palestine, my mother only laughed. But now, she asked for a smartphone and made a conscious effort to passionately investigate the different types and specifications in an attempt to understand the various technical details. I reminded her of that funny incident ten years ago when I had said – with complete optimism – "Let's hope that ten years from now you will have a new smartphone whose label says 'Made in Palestine'!"

This anecdote made me extremely happy and proud to have established Al Nayzak, which is a unique initiative that looks for young talents in science, technology, engineering, and math (STEM), and plants an ambitious vision in the hearts of our community: "To develop, root, and reinforce a new culture that embraces science, and to announce this culture among Palestinian youth so that their competence in productive applied sciences would provide them with better economic opportunities that would lead to their future prosperity."

Al Nayzak's approach is to make scientific-thinking skills become an inherent part of the lives of Palestinian people. In order to do this, it applies empirical tools to help individuals acquire thinking skills and relate them to genuine savoir-faire and technology. In this way they become capable not only of facing challenges in their journey to achieve excellence but also of helping to develop their environment and build a modern Palestinian society.

We have adopted a number of annual programmes that target various age groups, including Talented Students Incubators for kids and adolescents from 10 to 14; Young Researchers for those from 14 to 17; Scientific and Technological Entrepreneurship (STEP) for school students from 14 to 17; Made in Palestine (MIP) for those who are 18 and above; and Tafkeer, thinking technology for schoolteachers. There are also a number of complementary projects to convey a message of science and knowledge to all segments of the society.

Young researchers.

Our science home is managed by a team of specialists who possess unique scientific experiences in applied sciences and engineering, in addition to a group of psychosocial and pedagogic counselling experts. It serves all Palestinian areas through its offices in Jerusalem, Ramallah, Gaza, and Nablus, as well as in the House of Science and Technology in the Old City of Birzeit. It benefits from a widespread network of coordinators all over the country. Al Nayzak has opted for an approach of annual programmes rather than projects of limited duration and embraces the scientific talents of people 10 years old or above. Its core programmes include the following:

1. Talented Students Incubators

The Incubator is an interactive annual programme designed to host talented students and others with exceptional intellectual abilities. At the beginning of the programme students in the third grade are assessed through specialised psychological and technical exams. Successful students then become eligible to embark on a four-year journey to develop their talents and acquire leadership skills to become pioneers within their society. The tools are tailored to the specific abilities and needs of the students.

2. Young Researchers – Badir (Initiate)

Adolescents: Agents of Positive Change

The Young Researcher programme enables adolescents to discover knowledge and explore social phenomena using a number of scientific applications that are of interest to them. They are encouraged to think outside the box and have their own vision of their community's issues.

The programme is structured to combine scientific research and practical application. Results of the research are published to help implement initiatives in the community and respond to certain topics. Adolescents are first oriented to the basics of scientific research and critical observation for the purpose of problem solving in their communities. They learn to apply logical analysis and subjective criticism in choosing their research topics using scientific methods until they can formulate their conclusions/ recommendations. They then use their research results to raise public awareness through the "Advocacy through Innovation" campaign. They share their observations through social media, workshops, and field visits. Some of the proposed solutions have been broadcast on video spots and local TV channels. Afterwards, the adolescents start to lead community-based initiatives and volunteer work to help solve the problems which they discussed in their research and which affect their daily lives as adolescents. As such, they use their acquired skills to work for positive change. Upon their graduation from the programme, the young researchers become members of Al Nayzak Volunteer Unit, which represents a "national taskforce" that provides a role model for other projects in the community.

3. Palestinian Science and Technology Entrepreneurship Program - STEP

Launched in 2013, STEP supports Palestinian students with innovative projects and research ideas in various fields of applied science, engineering, and technology. The programme disseminates a culture of science and technology research and innovation by empowering the students with the necessary capacities to implement unique and original projects to help their communities to develop in order to keep up with the latest advancements in science and technology.

Applicants to STEP receive an intensive, specialised training in various topics, including scientific research methodologies and professional scientific writing. Furthermore, applicants receive technical and professional support and specialised counselling by Al Nayzak professionals. The first and second round marked a milestone with the submission of over 950 projects by 1,780 students from various schools in the West Bank and Jerusalem. Eighty-two projects prepared by 167 students were shortlisted and made it to the nation-wide closing exhibition and ceremony that were attended by 5,000 visitors. The 15 winning projects provided implementers with the opportunity to participate in a scientific trip to the United States to enrol in an intensive training programme at the Smithsonian National Air and Space Museum and NASA in the areas of engineering, sciences, and physics. Furthermore, the winning projects were displayed at the Air and Space Museum to be seen by thousands of visitors.

4. MIP- Made in Palestine incubator for entrepreneurism and scientific innovation

Made in Palestine/Made in Jerusalem is one of Al Nayzak's annual programmes.

A scientific exhibition.

At the Science House, Birzeit.

It aims to support innovative ideas in science, engineering, and technology; and it links the academic experience gained at university level with the technical skills needed to enter into the world of business, in an effort to provide solutions to the technological, scientific, and industrial problems encountered by the local community.

The core focus of the programme is to afford Palestinian innovators both inside and outside universities with genuine opportunities to achieve their hopes and aspirations. They would be able to use their capacities to develop new products or solve technical problems using creative methods and mechanisms. The programme has been a phenomenal success in preparing the ground for a culture of innovation and celebrating creativity in Palestine. Moreover, the participants have achieved the highest scores in local and international competitions such as "Made in the Arab World" and "Stars of Science."

5. "Tafkeer" Thinking Technology – integrating technology in education

Thinking Technology is a distinguished educational technology programme that aims to develop an effective Palestinian model for the integration and use of technology in the educational process in schools. It targets dozens of schools of various governmental, private, and UNRWA systems, focusing on four main areas: advancing the teaching-learning physical environment at schools; developing students' skills in critical thinking and technological production; on-the-job teacher training, and creating Arabic innovative e-content that is made available in the Apple store and the Google play store.

6. House of Science – Pilot National Science and Technology Museum (NaSM)

Crowning its series of achievements and a 10-year journey of innovation, the organisation inaugurated in 2013 the first Science and Technology House in Palestine, where visitors enjoy hands-on activities, all dedicated to creating a culture of scientific thinking. This constitutes a pilot project prior to the establishment of the National Science and Technology Museum in Palestine. For this purpose, Al Nayzak has invested all of its efforts in its first ten years of operation to building local Palestinian technical capacities, with the vision of designing and building high-quality, scientific hands-on exhibitions and exhibits, and developing interactive activities for visitors around each exhibit.

The Science House received approximately ten thousand visitors during its first year of operation.

7. The first Innovation Park and STEM School … in Jerusalem

Al Nayzak has implemented an initiative to establish the first Innovation Park and Talented Students School in Palestine to be located in Jerusalem. This school aims to educate students who believe in excellence. We desperately need a national Jerusalemite educational system that is not based on rote learning but rather aims to motivate creative and critical thinking and analysis. As a result of communication technology, all the information we search for has become available online. However, the important question is: How should we deal with this mass of information? And how can we use this accumulated information to promote analytical capacities that enable us to use our understanding to innovate and create and build knowledge-based capital?

The Innovation Park comprises an elementary and secondary school that specialise in science, technology, engineering, and math. It provides diversified facilities, including a gym, a swimming pool, playgrounds, traditional and digital libraries, and indoor and outdoor theatres. It also hosts a scientific garden that is open to the public round the clock.

8. Art of Science – Art in Science

Science is an essential art that impacts our daily activities and constitutes a vital component of human culture. We have therefore worked on several programmes that merge art and drama with science to explain concepts that would be hard to clarify using traditional methods.

The Scientific Theatre is a live interactive stage performance that presents scientific methodology, igniting the audience's imagination regarding research and facilitating the discovery of real answers to serious problems that they encounter in their lives.

"Why can't we connect the refrigerator to lightning if lightning is electricity? Why does hair stand when it is charged with electricity?"

Innovation Park, Jerusalem.

This is what the Scientific Theater play character (main actor) asks on stage.

There you have a summary of Al Nayzak, ten years after its establishment. A simple idea; tons of patience, passion, and daily effort have brought about remarkable success. Over the next ten years we will continue our programmes and transform them into national programmes that are accessible to all Palestinians who are interested in science, engineering, and technology. Together with our partners, we look forward to inaugurating the National Science and Technology Museum. And we will set up the Innovation Park's network to start in Jerusalem, connecting other governorates nationwide; it will reflect Al Nayzak's path with a first step in Jerusalem and steady steps to every other town in Palestine.

And we hope that, ten years from now, this Jerusalem-based national institution will be able to offer my mother a smartphone that is "made in Palestine"!

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