



case study

STEAM++
K-12 Innovation Program

International School Al Koura

Fact & Vision

In the heart of Lebanon’s vibrant educational landscape, International School Al Koura (I.S.) is revolutionizing its approach to teaching by embracing the tools of the Fourth Industrial Revolution (4IR). With a forward-thinking vision to prepare students for the complexities of a digital economy, I.S. introduced the STEAM++ Innovation Program engineered & produced by iET:Robogeex, a cutting-edge initiative designed to empower students with the Innovation skills, creativity, and ambition needed to thrive in a rapidly evolving world. By integrating Science, Technology, Engineering, Art, Mathematics, plus SDGs & 4IR (STEAM++) with creative problem-solving & interdisciplinary learning, the program is shaping the future innovators of tomorrow.

But what was the problem the school was facing, and how did this program solve it?



Challenges

I.S. Al Koura, despite its strong foundation in computers & Data science technologies, faced challenges in bridging its curriculum with the 4th Industrial Revolution due to insufficient interdisciplinary integration. This gap left students unable to apply theoretical knowledge to real-world problems, limiting their creative problem-solving and collaborative abilities. As a result, students, though technically proficient, lacked the holistic experience needed to innovate, collaborate, and adapt to modern workforce demands. The school recognized the urgent need for a dynamic, hands-on learning environment to foster critical, creative, and responsible thinking.



Solutions

To address the challenge, I.S. Al Koura integrated the STEAM++ Innovation Program into its formal agenda, combining Science, Technology, Engineering, Arts, and Mathematics with hands-on projects, teamwork, and problem-solving aligned with SDGs and 4th Industrial Revolution productivity. The program features a state-of-the-art Innovation Lab (Groups of Innovation Islands), enabling students to engage in PBL projects through Coding, Robotics, CAD Design and 3D Printing Fabrication, fostering critical thinking, Design thinking collaboration, and technological adaptability, using leading engineering solutions from Autodesk.





Testimonial:



Rima N. Nasr
School Principal



One of the factors that hastened the adoption of a STEAM++ Innovation program at I.S. is its interdisciplinary approach and potential to prepare students for modern challenges. Since the launch of I.S.AIKoura 2020 campaign, the school's vision, which incorporated 21st century skills (Creativity, Collaboration, Critical thinking, Communication, digital Citizenship & Character) in the curriculum, and whose mission was to graduate "independent, self-sufficient, and well-rounded critical thinkers capable of taking initiative and solving real-life problems", meant that the adoption of a STEAM++ Innovation program was the next logical step on our journey. The International School Al Koura has been a pioneer since its inception, with technology and computer science at the forefront of its curriculum. As we sought NEASC accreditation, consolidating the importance of technology and innovation only mattered more.

The academic year 2024 - 2025 saw the growth of the computer science department with more personnel and a new state of the art STEAM++ Innovation lab (Innovation Islands) by iET:Robogeex, whose purpose is to provide students with interdisciplinary Project Based learning, enhanced engagement and collaboration, practical skills development, national and global competitiveness, compliance with SDG's (Sustainable Development Goals - the school is part of the UNESCO Network of Schools) and CSR (Consumer Social Responsibility), as well as cultural and creative experiences and exchanges. STEAM++ consolidates the transformative approach we are seeking as a candidate school on the NEASC ACE Pathway Accreditation process. It fosters innovation, interdisciplinary collaboration, and practical skills.

STEAM++





Vision & Objectives:



Celina Akar
Assistant to the
Chairman of the Board



“ To a man with a hammer, everything looks like a nail.” - Mark Twain

This is also called the law of instrument, which is a ‘cognitive bias that involves an over-reliance on a familiar tool’. Do we need new tools as a society for our new-found challenges? What are the new instruments of our times, in which we are undergoing, to variable degrees, the fourth industrial revolution, also known as 4IR, or the 21st century Industrial Revolution? 4IR is defined by advanced analytics, automation, connectivity, augmented reality, etc... In other words, it is a digital revolution that is transforming the economies of the world to Digital Economies, impacting commerce, transportation, education, health, and almost every aspect of our daily lives. Our students, Gen Z and Gen Alpha, have already tapped into the world of social networking, without knowing the full potential, or the risks that come with an online footprint. Introducing our students to the tools of the 4IR revolution has become imperative, so that they can make informed decisions on their education, and shape their careers in a deliberate and goal-oriented manner.

The STEAM++ Innovation program at I.S. hopes to introduce our students to this new world. We want to awaken in them the realization that each and every one of them, when equipped with the highly accessible tools of the digital world, can become inventors or entrepreneurs in their own right. We hope to teach them how to be efficient about their problem solving, and how to be driven towards a socially responsible goal. To go through a STEAM++ project, our students need to use the science, technology, engineering, art, and math that they learned, plus a touch of creativity, and a lot of ambition. Could they be the future change makers in our Digital Economy? High hopes indeed!

Academic Team:



The STEAM++ Innovation Program incorporates the latest technologies and tools used in various industries, such as coding, robotics, data analysis, and design thinking. By familiarizing students with these technologies, they can develop a proficiency that aligns with current labor market demands. By effectively linking our school's innovative vision with the labor market through the program, as an educator, I can prepare students not only for academic success but also for fulfilling impactful careers.

Mr. Joseph Saleh



STEAM++



Through my experience teaching the STEAM++ Innovation program, I've seen how they connect the school's innovative vision with the demands of the modern workforce. The program provides a beacon of hope. It empowers students to develop skills like critical thinking, creativity, and technological adaptability—tools that are vital for the tomorrow's industries. I've personally witnessed students applying what they learn in practical, hands-on ways, preparing them not only to navigate the challenges of Lebanon's job market but to become active contributors to change.



Zeina Al-Ait



The program's ability to link the school's motto with the emerging modes of production, physical and virtual, through Pictoblox:

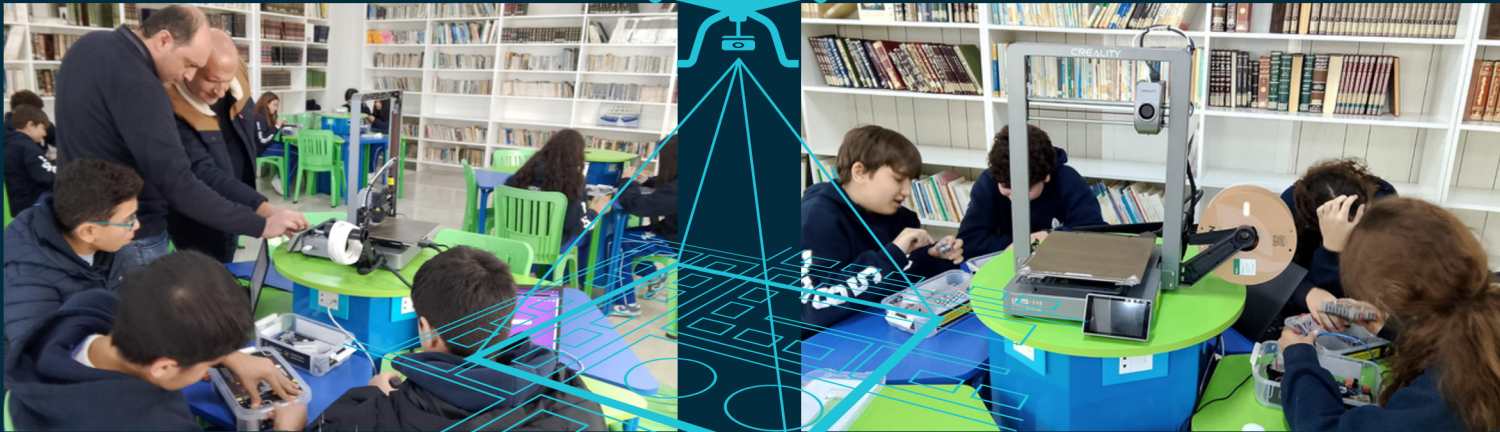
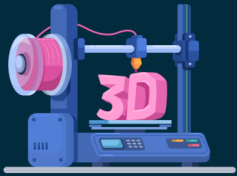
A block-based coding platform called Pictoblox was created to teach AI and coding. It is perfect for novices and kids interested in Python and other programming languages because of its easy-to-use interface and drag-and-drop capabilities. With practical coding, AI, machine learning, the Internet of Things, robotics, game design, and virtual reality, it gives students the tools they need to develop and realise their ideas. Our goal is to provide students with the resources they need to actively participate in the digital era. Have fun while learning to code!

Yvonne Debs



Jack Nassar

The school's Innovation makerspace Lab plays a crucial role in fostering creativity and the practical implementation of innovative ideas. Equipped with 15 touch-screen laptops connected via both Wi-Fi and LAN, as well as networked 3D printers, this lab is designed for seamless collaboration and experimentation. The availability of a cutting-edge 86-inch Interactive touch-screen Promethean panel further enhances interactive presentations and brainstorming sessions, ensuring all students are engaged. With a robust wireless network, the lab is well-prepared to support a dynamic environment where innovative solutions can be developed, fabricated & tested effectively.



STEAM++



With the objective of broadening our academic horizons and teaching our students new skills, IS Al Koura introduced STEAM++ to the curriculum of 2024-2025. As a physics teacher, my focus has been on the grasp and utilisation of physics concepts in practical terms, not just in theory. As a result, after 5 weeks of STEAM++, my students are now able to program their computers to solve physics problems for them. This, in fact, will give them the opportunity to gradually create simulations and animations themselves, which truly enhances their learning experience. In short, implementing this program by the school allows me, not only to teach my students physics, but also to give them a chance to extend their knowledge by programming/coding the formulae we learn in class. Consequently, the program developed by my learners opens up new perspectives for them, which will enhance their creativity, and critical thinking skills. Accordingly, this allows them to apply the school slogan and to link what they learned in class to life.



Ramzi Saadeh



$$E=mc^2$$



Conclusion:

The STEAM++ Innovation Program at I.S. Al Koura is a game-changer in the education sector. All we need is to allocate two periods per week (approximately 60 hours per year) to cover and integrate Technology, ICT, Creativity, and Innovation. By bridging the gap between theoretical knowledge and practical application, the program prepares students to navigate the complexities of the Fourth Industrial Revolution (4IR). It fosters creativity, critical thinking, collaboration, and technological proficiency, empowering students to become innovators, entrepreneurs, and leaders of tomorrow.

As the program continues to evolve, I.S. Al Koura is setting a new standard for education in Lebanon and beyond. By aligning the curriculum with the demands of the digital economy and equipping students with the tools they need to succeed, the school ensures that its students are not only prepared for academic excellence but are also ready to make a lasting impact on the world.

With the STEAM++ Innovation Program, I.S. Al Koura is shaping the future, one student at a time—preparing them not just for the jobs of tomorrow but for a world where they can create, Innovate & lead change. The future is now, and our students are ready to lead it.



Our Partners:

