

VIZIUM – VENTSPILS SPRINGS INTO SCIENCE

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Today we are at the dawn of an age of unprecedented technological change. Rapidly changing trends of industry compounded by issues of the skills gap in the labour force are putting pressures on education and learning systems to act on 21st century skills. Scientific literacy is one of the skills required in the digital age. This means knowledge and understanding of the scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity.

From 1 September 2020, schools in Latvia gradually started introducing curricula and approaches in accordance with the new standards of primary and general secondary education. The number of lessons in subjects has been made much more flexible, the total number of lessons in a subject is set for three years, not a week, as has been the case before. Students in upper-secondary school will be able to devote about 30% of their study time to those subjects that are of particular interest to them – so it is essential to adjust education content and learning approach to focus on bringing 21st century skills and literacies to educators and students. The concept of competency in the 21st century implies more than just the acquisition of knowledge and skills, it also involves 21st century literacies and mobilisation of knowledge, skills, attitudes and values to meet complex demands.

The report to the European Commission of the expert group on science education [1] highlights: “As the world becomes more inter-connected and competitive and as research and technological know-how expands, new opportunities along with more complex societal challenges arise. Overcoming these challenges will require all citizens to

have a better understanding of science and technology if they are to participate actively and responsibly in science-informed decision-making and knowledge-based innovation.” Collaboration between formal, non-formal and informal education providers, academia and industry should play a vital role in the increasing interest in science and science careers.

To establish a first-class learning resource for children and adults, Ventspils Municipality has decided to build a modern and capable science and innovation centre. Named VIZIUM – portmanteau of the words “**V**entspils **I**novāciju un **Z**inātnes **centrUM**” (Ventspils Science and Innovation Centre) – the centre will occupy a 6300 sq.m. building and a territory of 22 950 sq.m. The construction started in October 2019 and the centre was scheduled to open doors after 24 months – in the beginning of 2022, a truly formidable speed. The centre will be equipped with exhibition halls, hands-on labs, auditoriums and interaction spaces for the purpose of nurturing visitors to have the attitude and aptitude in science, technology, engineering and mathematics (STEM).

The centre is set to become a highly visible and trusted hub of activity, promoting interest, learning and creativity in science and technology, through imaginative and enjoyable experiences, facilitating discussion about science and technology, and a key strategic partner to academia, the public sector and industry to develop, promote and embed our “Inspire and Challenge” approach to science education working in partnership with local authorities, schools, teachers, academia, NGOs and industry. VIZIUM vision is to promote and link high-quality formal, non-formal and informal science education



Visualization of the Ventspils Science and Innovation Centre VIZIUM building, author: Audrius Ambrasas Architects

opportunities with outstanding relevant and meaningful experiences in science to people of all ages and backgrounds, to inspire, motivate and encourage learning and deeper engagement. To achieve this vision, in parallel to the construction of the building, exhibits are being designed and 20 curriculums are being developed for smart technologies, geography, information and communication technologies, natural science, physics, mathematics, human anatomy and self-knowledge.

To stimulate interest in science activities, enable students to carry out self-directed activities in various disciplines of science and to provide opportunities for students to develop initiative and creativity, the Young Researchers Centre is being established in close cooperation with Ventspils University of Applied Sciences. The Young Researchers Centre, as a pre-academic framework, aims at strengthening the potential of school students in order to encourage them to pursue higher education, with an emphasis on science and tech-

nology studies. The centre provides students with hands-on laboratory experience and computerised learning environments not available in their schools. The cooperation with an academic and research institute creates an opportunity for meetings with experts as role models in science. The activities encourage educational continuity in order to promote excellence in science and technology that will naturally encourage students to continue their education, in general, and to specialise in the sciences, in particular.

The science centre will provide a source of high-quality and attractively packaged information about science and issues of relevance not only to young people, but specially designed curriculums and workshops for both teachers (training them in the use of the exhibit) and students are being developed to complement formal schooling and to extend school science teaching. These workshops will also focus on creating content that will support teachers in the classrooms and help them

communicate science to children to provide an approach to teaching and learning that incorporates co-creation, 21st-century learning, innovation and design thinking.

Although it may sound as a revolution, Ventspils City Municipality has a long history of using information and communication technologies and providing high-quality formal, non-formal and informal science and digital skills education opportunities. Since the year 2000, when the first Information Technology Development Strategy of Ventspils was accepted and implemented, and a dedicated municipal institution, tasked to foster development of information society – Ventspils Digital Centre, was established in 2003, a new era of informal learning started.

Growing gradually, Ventspils Digital Centre now constantly runs various educational events for adults and children. In 2020, more than 1500 people have acquired knowledge both at the professional level and for home use in topics such as spreadsheets, digital photo and video processing, computer graphics, computer drawing, programming, internet security and use of e-signature and e-services.

Since September 2015, the Operational Programme for the Acquisition of Computer Skills in Ventspils City General Education Schools has been implemented in three main directions:

1. Computer skills acquisition programme developed by Ventspils Digital Centre;
2. Approbation and implementation in schools of the curriculum “Computer Science” developed by the State Education Content Centre;
3. Classes developed by schools for the development of digital skills.

The objectives of this programme are:

1. To provide students with the opportunity to acquire knowledge, skills, abilities and attitudes necessary for meaningful use of technology;
2. To promote students’ interest in information and communication technologies (ICT) and to promote students’ desire to study technology after school;
3. To provide an opportunity to use ICT in the learning process for all students.

Classes last a full school year: from September to May. Participants are divided into groups according to age and classes are held once a week, except for robotics classes for the middle age group, where



Visualization of the exhibition hall, author: Didzis Jaunzems Architecture

students work twice a week and one lesson lasts 90 minutes (two academic hours with a break).

In the first school year, 298 participants in ten programmes participated in interest education classes, but with every year students' interest in learning technologies has increased. Currently, 704 participants participate in technology classes, which is 236% of the initial number of students.

All curricula are based on professional software and technology, for example, digital home economics, computer graphics, digital photo, and video learning programmes use professional Adobe software (Adobe Photoshop, Adobe Illustrator, Adobe Premiere, etc.) that is used in printing and advertising companies and skills and knowledge acquired in this way can be practically used in students' professional development.

Ventspils Digital Centre has also developed a curriculum for teachers, "Towards digital competencies", to demonstrate the principles of operation of latest digital technologies covering topics such as technology, the humanities, the exact and social sciences to facilitate their use in the school teaching process.

This work has led to major results – opportunities to learn a broad spectrum of digital skills are available for everyone in Ventspils and are hugely popular, emphasising the need to provide access for 21st century skills for everyone. The Ventspils Science and Innovation Centre, scheduled to open in spring 2022, is being set up to provide major boost and bring the availability of 21st century skills to the next level.

REFERENCES

1. http://ec.europa.eu/research/swafs/pdf/pub_science_education/KI-NA-26-893-EN-N.pdf