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PROJECT DEEP

Digital Entrepreneurship for Employability Path

CASE STUDIES - BEST PRACTICES

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[CENTER FOR CREATIVE TRAINING \(CCT\)](#)^[1]

The mission of Center for Creative Training (CCT) is to enhance the overall learning environment in Bulgaria through the implementation of personalised technological solutions for educational institutions, the creation of innovative teacher training programs, and youth programming.

CCT is the author of 16 teacher training programmes. The training programs aimed at the meaningful integration of and holistic approach to technology in the classroom. Among the most frequented training programs are “School in the cloud”, “Design and implementation of ICT”, and “Instruments for attractive education”. All training programs are approved by the Bulgarian Ministry of Education and have an ISO Certificate of Excellence. CCT’s position is that the purchase of new technologies and teachers’ trainings are by themselves insufficient to bring about educational transformation. What is needed is a holistic approach combining the meaningful implementation of technology, innovative learning environment design, and strategic planning. Educational transformation has to have a clear objective, in sync with the demands of today, attuned to the future.

CCT initiatives are summarized below:

- Schools of the Future - Technological consultant and partner in the creation of a technologically innovative educational environment for the program “Schools of the Future” by the America for Bulgaria Foundation.
- Science Camp - The international “Science Camp” program, taking place in Bulgaria, designed and organised by CCT, which brings together young people with scientists for 5 days of workshops and science activities.
- the ‘School in the cloud’ initiative aiming to integrate cloud-based platforms for education in Bulgaria.
- ‘Virtual and augmented reality in a learning environment’. In includes innovative teaching methods by using applications such as Google expedition.

CCT provides LEGO education to promote STEAM disciplines by paying particular attention to students’ cognitive development.

¹ <https://cct.bg/>





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- Initiation
 - The main reason to introduce all of the above-mentioned initiatives is the need to transform the education by deploying available technological solutions and tools.
 - What were the main objectives to achieve with the initiative?
- Target group(s)
 - Young people;
 - Children at risk;
 - Children from disadvantaged background;
 - Children from minority groups;
 - Teachers and other teaching personnel.

Since 2008, CCT has been actively involved in the field of educational transformation. In 2017, CCT became the first and only official partner of Google for education in Bulgaria and in the region for professional development, services (G suite for education) and sales (Chromebook devices).

Experts from the CCT team are active in various educational and technological initiatives, some of which are:

- the Innovative Schools Commission for the Ministry for Education;
- the working group on the strategy for education development for Plovdiv Municipality;
- becoming the only Google certified innovators in the field of education in Bulgaria;
- the national coordinators of Space Camp Turkey's programs in Bulgaria: www.spacecamp.cct.bg;
- Supporting structures (e.g. municipal structures, collective agreement, legislation, research institutes/universities);
- Financing:
 - Funding, public and political incentives, invested costs;
 - Return on investment (if measurable).





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Strengths and lessons learnt

The undertaken holistic approach towards digitalising education by introducing novel contemporary teaching and learning methodologies had a positive impact on the overall educational development.

The overall approach creates conditions for an interesting and engaging learning process that engenders and retains young people's interest in learning and reduces the likelihood of early school leaving.





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DUALIZA BANKIA. TRAINING IN DIGITAL COMPETENCES IN DUAL VOCATIONAL TRAINING²

The initiative aims to provide skills and training to students in dual vocational training. Created trainings alternate between that received in an educational centre and that received in the company.

Dualiza Bankia is the brand through which the Bankia Foundation for Dual Training channels all of its activities to promote and enhance the prestige of vocational training and its dual-mode. It represents the unequivocal commitment acquired by Bankia with the promotion of education, as a way of improving society, combating inequality, and promoting greater social cohesion and more specifically Vocational Training. The assumption behind these activities is that the practical training improves the employability possibilities for students and the competitiveness of companies.

The type of implemented measures is articulated through agreements between Bankia, the councils of autonomous communities, local governments and local business associations.

Once agreed, a series of educational centres are selected in which the training is provided.

Students receive between 150 and 200 hours of additional training to their programs in digital skills, which reinforce their professional skills needed to exercise the professional profile that the business sector demands in terms of digitalization, allowing them to increase their professional quality and improve their employability.

In the second stage, students use the acquired skills in the companies.

Companies benefit from this programme in a several ways. They receive young people with technological training in skills that are scarce in the labour market and, also, when they hire people under 30 years of age, they receive reductions and bonuses on their Social Security contributions.

The contents of the Ditec training includes the following elements:

- Digitalisation: Its aim is to make students aware of the impact and importance of digitalisation in the business environment. Main innovation methodologies are focused on the client for the design and agile development of digital products.

² <https://www.dualizabankia.com>





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Tools: Slack, Trello, Google G Suite, Business Model Canvas, Customer Journey, Empathy Map, etc.

- Digital Marketing: Its aim is to introduce students to the main techniques of digital marketing, design of a digital marketing plan, web positioning. Tools: Semrush, SeoMoz, Majestic, Google Adwords, Facebook Ads, G. Analytics and Mailchimp.
- Ux user experience: The aim of this element is to assess the knowledge of students on the Ux, and to teach them what impact Ux has on the business as a tool for digital customer loyalty. Tools: Nav Flow, Information Architecture, Atomic Design, Wireframes with POP, Mockups with Proto.io
- Web programming: Its aim is to help to your people acquiring technical skills for the development of web applications. The Frontend development is based on Google's framework (AngularJS) and the Backend will be based on the Django framework. Tools: SQLLite databases, JS languages, AngularJS, Python, Django, HTML5, CSS3, Chrome Console.

The projects are financed with funds from the Bankia Foundation together with European funds and participation from the Autonomous Regions.

Strengths and lessons learnt

The programme provides vocational students with training in digital skills that are not included in their training itinerary.

It provides companies with the possibility of approaching people from vocational training with a good range of digital skills, thus increasing the competitiveness of the companies.

Having a good repertoire of digital skills is fundamental in the daily life of any citizen, but even more so for professionals, of any branch.

It is an added value for the training of "manual" workers or operators and not only for those people with an academic profile specifically related to computing or ICT.





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ACTIVE YOUTH ENTREPRENEURSHIP NETWORK (AYEN)³

The objective of the project is to build a transnational entrepreneurial network that facilitates NEETs in the age group of 25-29 to discover needs/opportunities within their own community that can be developed into new businesses and jobs in Bulgaria. The creation of a network of relevant stakeholders will allow them to work together and share their experiences and views on how young people can create their own jobs. Through a comprehensive set of innovative tools, the project strengthens existing regional entrepreneurial communities to foster sustainable creation of jobs.

Activities within the initiative:

- Recruit, include and integrate NEETs into existent entrepreneurial environments.
- Assist them in the development of individual and team business ideas, based on local needs, opportunities and resources.
- Provide to NEETs access to skills and markets through international study visits, local and transnational internships.
- Engage experienced entrepreneurs and retired experts in mentoring.
- Use and test digital tools in daily operations as an input to product/service development and internal supply/demand.
- Establishment of a digital exploratory gamification motivation system and a Local Economy System to stimulate economic activity locally.

- Initiation
 - The main reasons to introduce the initiative is that many young people are not willing to move to get a job, or simply do not have the necessary skills to get a job in another town, city or country. Therefore, there is a need to create new jobs where young people live and reside.
 - Main objectives:
 - Facilitate jobs' finding for young people;
 - Create new jobs in NGOs and social enterprises;
 - Help and support young people to start their own business.
- Target group(s)
 - Young people not in employment, education or training 25-29;
 - Entrepreneurial support communities;
 - Experienced mentors;
- Specific characteristics: targets social inequality and regional distribution of jobs;

³ <https://www.rapiv.org/en/>





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- Supporting structures: NGOs, social enterprises, central and local government authorities;
- Financing:
 - Co-funded by the EEA and Norway Grants Fund for Youth Employment Return on investment.

Strengths and lessons learnt

The project might have positive effects on the local economy in the participating regions by creating new jobs' opportunities and involve the young working force in full. This characteristic is transferable on its own. With regard to sustainability, partners should consider what is necessary in order to keep improving young people's skills as well as the requirements to maintain the need and relevant of a particular job or business.

The identified needs demonstrate that it still does matter where you are coming from and where you are living in terms of job opportunities and career development, despite the digitalised and mobile world, we live in. Further efforts and resources are necessary to bring the benefits of digitalisation to other parts of the country.





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ARTES 4.0 – ADVANCED ROBOTICS AND ENABLING DIGITAL TECHNOLOGIES & SYSTEMS 4.0⁴

ARTES is a multi-technological Hub that develops innovative Industry 4.0 projects in support of SMEs and microentrepreneurs so to enable their success in the digitalisation path.

ARTES 4.0 is one of the 8 Competence Centers selected by the Ministry of Economic Development within the Industry 4.0 National Plan in Italy.

Through ARTES 4.0 and its facilities, companies and private firms are able to access to multiple funding opportunities up to € 200,000 directly from MiSE.

ARTES 4.0 communicates its initiatives and programs to SMEs, private and public foundations, Associations and government agencies.

ARTES' activities cover the following thematic areas:

- Robotic. AI and “collaborative machines”
- Model-based control systems for multivariable analysis
- Technologies for real-time process optimization
- Applications and technologies for data storage and processing
- Basic software infrastructure
- Cyber-security technologies
- Augmented and virtual reality and multisensory telepresence systems
- Robotic and augmented reality technologies and sensor systems for predictive maintenance and training
- Technologies 4.0 to improve workers' health and safety at work
- Development and characterization of advanced materials
- Digitization and robotization of processes
- Technologies, networks, systems and communication, both wireless and wired.

ARTES 4.0 services fall under the following categories:

- ORIENTATION:

In a collaboration with national and international DIHs, ARTES 4.0 assesses the level of digital and technological maturity of its clients in order to proactively support them throughout the digitalisation of their processes and assets.

- EDUCATION and TRAINING:

⁴ <https://artes4.it/>





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ARTES 4.0 develops classrooms and training projects greatly focused on ICT and “intelligent robotics” in order to foster, promote and spread Industry 4.0’ skills and digital education among current and future generations of entrepreneurs

- INNOVATION PROJECTS:

ARTES 4.0 guarantees the access to MiSE assets in order to facilitate innovation development, industrial research and experimental IT projects. These initiatives are aimed to remarkable products, processes or services’ improvement through the adoption of advanced technologies in the 4.0 research fields.

- BUSINESS MANAGEMENT CONSULTANCY

-business model innovation services

-technology scouting

-innovation management

-marketing

-desk analysis of macroeconomic and social dynamics related to Industry 4.0.

Strengths and lessons learnt

MiUR and MISE’s reinforcement assures great reliability upon each activity conducted and promoted with the organisation; ARTES 4.0 “catches”, understand and satisfy the innovation needs expressed by companies, in particular SMEs, helping them to identify their innovation and competitive paths.

ARTES 4.0 is also an innovation accelerator that greatly boosts industrial applications, product engineering and design, job qualification and employability opportunities for all.

Successful digitalisation strategies require as mandatory condition the proliferation from the bottom of the socio-economic system of a supportive cross-sectorial ecosystem that enables and triggers great knowledge transfer.

Such bottom-up approach is much more efficient and effective than a sterile top-down financial commitment that is not framed into any concrete long-term strategy.





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NORTE DIGITAL⁵

Norte Digital aims to help the SMEs based in the North of the Portugal to benefit from the potential of the digital economy.

The Norte Digital project supports SMEs in the process of building a digital strategy, assisting them to facilitate the creation of the necessary conditions to strive in the global market.

The *Norte Digital* actions are the following: to increase the number of SMEs in the digital economy; enhance the access to new markets and the creation of new products and services; qualify and prepare up to fifty SMEs to enter in the international market; create three cabinets to support SMEs in the digital transition process; concur to the promotion and improvement of intersectoral synergies; empower new companies that think “out of the box”; facilitate and promote synergies between SMEs in accordance with digital trends; contribute to reinforce the achievement indicators of SMEs; and, finally, to strengthen skilled employment by promoting the interconnection between the training offer and market needs, namely in terms of digital skills and ICT expertise. To fulfil its mission, along with conferences and presentations, Norte Digital provides diagnostic studies, consulting and training pilots to SMEs.

Strengths and lessons learnt

Until now the initiative was implemented at the regional level only. It has huge potential to be transferable to other regions. At the same time it is also sustainable, as the demand for the support provide by Norte Digital will increase in the upcoming years. It should be extended to a comprehensive training programmes targeting both the SME's leadership and employees, to boost the digital transition process.

⁵ <https://www.nortedigital.pt/>

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TIC-TAC E-COMPETENCY MATCHING PROJECT⁶

The Rosa Chacel Center, in Colmenar Viejo, has been awarded a prize in the 2019 National Contest of Good Practices in Teaching Centers, for developing a pioneering program to adapt education to today's technological world. The centre has been awarded by 'TIC-TAC. Project to accompany the digital competence', a work that involves all the students who receive digital training, not only from the technical point of view but also from the relations between the students.

The TIC-TAC Project has allowed to carry out integral management in the ICT field, covering aspects such as management, teacher training, methodological innovation, dissemination of experiences and evaluation of actions.

The project has two general objectives:

- To provide students with tools to become aware of, value and learn to control their digital identity.
- Involve the entire educational community, and students in particular, in the development of digital competence.

The school has implemented to a new way of evaluating the digital competences of students, moving from the evaluation of content through questionnaires and qualitative assessments to a new form of action with three lines. Didactic organization concentrates on the participation of the educational community and communication.

As regards didactic organization, the central elements are: the student's portfolio, the framework for the evaluation of digital competences and the digital competence bulletins.

Evaluation of digital competence: A learner-centred perspective was adopted, starting with the identification of the digital competencies that each student must acquire

⁶ <https://iesrosachacel.net/>

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throughout his or her academic training, taking as a reference point the specific tasks that they must master. Subsequently, the focus was on the teacher, drawing up a graduated list by educational level of digital competences and evidence of learning. Finally, a series of personal digital portfolios with evidence of learning was created for all students.

The digital portfolio accompanies the student through the whole educational journey. Each student creates a basic web page at the beginning of their stay at the centre which will be their digital portfolio. The portfolio should contain the digital content pages for each course, the digital activities for each subject. Each student uploads them in an orderly fashion to his or her portfolio with access for teachers only.

Digital competence bulletin is generated from the evaluation of each teacher of the activities for which they are responsible. At the end of the course, the centre reports to each family on the student's learning skills through a bulletin in which the digital skills are evaluated. This bulletin facilitates both the involvement of the students in the tasks and the global perception of the process by the teachers and the educational community. In the bulletin, it is easy to see what is being evaluated and to understand the process in a global way.

Strengths and lessons learnt

Digital skills can be learned by being associated with any academic activity.

It is advisable to start teaching them as soon as possible and to maintain them throughout all stages, adapted to the needs of the activity.

The learning process starts by providing motivated and trained teachers.

The sustainability of the activities depends almost entirely on the involvement of the educational community, since the centres already have the appropriate tools and facilities.

The degree of transferability as an innovation experience is very high since it can be exported to any centre or educational modality that has the basic means to implement the trainings.





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BI-REX – BIG DATA INNOVATION & RESEARCH EXCELLENCE⁷

Bi-rex acts as a strategic and operational support Hub for manufacturing companies oriented towards the digitalization and automatization of industrial processes falling under the Industry 4.0 national framework.

Bi-rex gathers the know-how of Emilia's High Technology network (industrial laboratories, infrastructures, Digital innovation Hubs) with the aim to develop high ICT solutions properly finetuned to SMEs' needs.

Bi-rex focuses its efforts on two main areas of development:

- Big data and new digital business models applied to/for manufacturing industries. In other words: enabling new technologies that facilitates the processing of big data and the implementation of highly sophisticated tech resources such as AI, machine learning and predictive diagnostic for business efficiency and competitiveness;

- Additive Manufacturing
Specifically related to the primary activities of any Manufacturing industry's value chain, the additive manufacturing consists of new technologies applied to the transformation of the primary inputs.

Bi-rex's mission is declined in 3 long-term objectives:

1. To establish a training, orientation and consultancy system for companies closely integrated to others Digital Innovation Hubs at national level.
2. To empower and strengthen a large ecosystem that prospers of innovative projects, experimental developments applied to the targets' needs and public-private initiatives focused on research and business competitiveness.
3. To test, validate and pilot a demonstration production plant to further foster the adoption of enabling and innovative 4.0 technologies for business management and SMEs competitiveness.

⁷ <https://bi-rex.it/>





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Moreover, Bi-rex has a very strong focus on digital education and consulting, which is made possible through several training programs, conferences, workshops, events and round tables highly customised on the basis of the target audience.

Bi-rex provides specialised expertise and knowledge on what are known the “enabling technologies” for the digitalisation of the manufacturing industry:

- Smart production technologies – new production technologies that link all the elements coexistent within the production: human operators, machines and tools.
- Smart services technologies – the overall "IT infrastructures" and techniques that allow the integration processes among the various systems involved, with no sort of exclusion or barrier (both cultural and technical).
- Smart energies technologies – the sustainment of highly efficient energy-consumption parameters, supporting at the same time essential goals of CSR.

Strengths and lessons learnt

Bi-rex stands as a very strong, solid and reliable initiative that leverages on multiple opportunities emerging from the great exploitation of the most avant-garde 4.0 technologies combined with the longstanding traditional know-hows and expertise of the Italian manufacturing industry.

The strength of the program is the ability to record the mutual dialogue existing between such diverse ecosystems whose harmony is allowed to guarantee for:

- *Highly innovative projects aimed at implementing never-seen-before solutions to well-know and longstanding business' needs.*
- *A productive system with no real sector, company and industry's constraints*
- *Never ending transfer of technological skills*
- *Prototype productions with great added value*
- *A continuous fostering of a cultural discussion that seems so desperately needed at national level.*

