



Erasmus+

Comprehensive method of implementation of Industry 4.0 concept into didactic practice in primary and secondary schools



INDUSTRY 4.0 IN ROMANIA



"Industry 4.0" is considered the fourth industrial revolution, by unifying digital technologies and the Internet with the conventional industry. Germany launched and supported this concept through government programs and leading companies such as "Siemens"

or "Bosch" and also Germany is one of the largest investors in Romania, many German companies already having state-of-the-art technology in our production facilities. The benefits of "Industry 4.0" are numerous, in that they present accurate data in the right context and format, creates flexible systems ready for change, ready for new opportunities and involves the simultaneous development of the product and the production process. Romania's move to Industry 4.0 has many advantages:

- it attracts many investments;
- the emphasis is on personalized production, high quality and manufacturing near the consumer market;
- in the last 10 years, the automotive industry has developed strongly in Romania, the number of automotive suppliers constantly increasing;
- "Industry 4.0" will attract new suppliers for cyber-physical systems (CPS- CyberPhysical System) in industrial production or services such as "IT security", "Big Data analysis", "M2M solutions" and "Artificial Intelligence"
- in Romania there are well-trained people who have the necessary skills for the digital factory;
- the numerous programs with non-reimbursable financing for research and development in the field of technologies "Industry 4.0" support the development of Romanian companies;

"Industry 4.0" offers significant development opportunities in Romania, and in order to realize the true potential of "Industry 4.0", companies must plan digital transformation.

BIBLIOGRAPHY:

<https://www.ttonline.ro/revista/t-t-plus/industry-4-0-in-romania>

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Editorial
Dissemination team

FOCUS GROUP

During January 2020 each partner conducted meetings with their focus group to discuss specific topics.

Focus group aim: to make sure that the content (and thematic areas to be developed) within the Teacher4.0 project is a direct response to the needs of project's target groups.

Focus group participants: local stakeholders (school founders, supervisors, inspectors, internal and external school evaluation conductors, also scientists, university teachers, initial and in-service teacher training providers, participants from associated partners from Poland, Lithuania, Italy, Romania and Portugal.

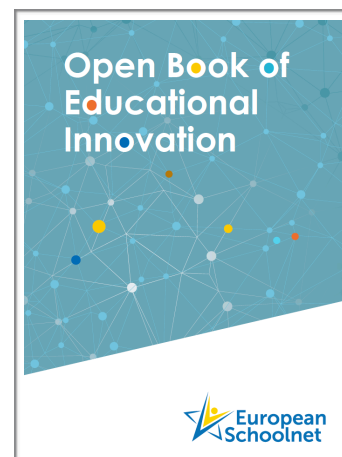
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Transnational Project Meeting N1

During this first meeting in Zespół Szkół im. ks. dra Jana Zwierza w Ropczycach (project coordinator) the main stages of the project and the scope of the work that that has been assigned to each of the partners was presented. Additionally, working documents were presented (those that have a significant impact in the proper implementation of the Project): The management plan and Auxiliary plans (Quality management plan, Plan of evaluation, Plan of dissemination and Sustainability Plan). Another important point of the meeting was the present of the Admin Project tool. Apart from this, main activities to be implemented during the first months of the project were organised and discussed ([Facebook link](#)).



Open Book of Educational Innovation

The Open Book examines how innovation, especially technology-inspired innovation is defined, showcasing over a hundred groundbreaking initiatives in schools across Europe.

[PDF version](#)



From Education 1.0 to Education 4.0 (by Paulo Antunes - AEMRN)

The education of the 21st century is inserted in the context of the fourth industrial revolution that impacts the way of thinking, relating and acting of the human being. Over time, education has experienced an accelerated metamorphosis, since the social, economic and political context presents a new scenario that requires another position of the professional inserted in the digital era. Over time, education has gone through a process of evolution that we can classify as follows:

Education 1.0 - In this phase, the educator was the most important figure in the organization and training of the student. The students, in an attitude of admiration and submission, received the teachings of the teachers, since he was the possessor of knowledge. The first schools were called parochial schools and were limited to the formation of ecclesiastics. Classes were taught in churches and teaching was limited to reading sacred texts. The teaching was based strictly on Christian education. For centuries, this education prevailed and fulfilled the expectations of the society of the time that did not want people to reflect, think and draw their conclusions. Therefore, in education 1.0, the curriculum consisted only of learning to read, write, know the Bible, sing and a little arithmetic, and the time included Latin, grammar, rhetoric and dialectic.

Education 2.0 - the "new" school 2.0 prepared people to work in factories. This 2.0 education, strongly influenced by the Industrial Revolution, has the same characteristics observed in industrial production: repetitive, mechanical tasks and individual work. The classroom was considered homogeneous and a teaching and learning methodology characterized by: standardization, concentration, centralization and synchronization. The education began to have as objective the training, based on the informative learning, to which the memorization was evidenced. The transmitted knowledge had, once again, the function of adapting the student to society and the labor market.

Education 3.0 - it consists of a new conception of what to teach, how to teach, with what I will teach and what to develop to deliver, as a result, at the end of the educational process, a person capable of working in this new social scenario. In education 3.0, the teacher needs to know how to use new technologies as a pedagogical potential. This education combines new technologies with learning, so it increasingly encourages students to develop autonomy, creativity, flexibility, participation and project-based research.

Education 4.0 - With the advent of the Fourth Industrial Revolution and the digital age, education presents a new paradigm in which information is found in the network of networks, in global villages and is accessible to all horizontally and circularly, without limit of time and geographical space. The educator, in this rain of information synapse accessible by ICT, becomes the orchestrator, the curator of multiple information with the student, where he seeks to organize and synthesize information, transforming information into knowledge and knowledge into wisdom. The student in this cyber-architectural environment becomes the actor, the author of knowledge through the proposed research in interdisciplinary projects that allow the development of skills and abilities to correspond to society 4.0.

Education 4.0 is a new pedagogical proposal that follows current demands, both in relation to the labor market and to the efficiency in the teaching and learning process. It is a reflection of a new industrial revolution, or industry 4.0, characterized by the use of high technology for the production of consumer goods.

Industry 4.0 is entering the curricula of schools around the world with activities such as educational robotics and programming, 3D and laser printing, virtual and augmented reality and its potential is being widely recognized. The need for our young people to develop these skills has become increasingly important and has recently become prominent in educational systems around the world thanks to social and economic motivations, as well as educational research.

However, most schools did not follow this evolution and follow the same methodology of the 19th century, marked by a model in which the teacher is responsible for transmitting knowledge, students are basically copyists, the contents are predictable and there are few stimulating activities. This new approach to education comes to extinguish the era of memorization without worrying about understanding what is memorized and comes with a pedagogical proposal compatible with current demand, both in relation to the labor market and the efficiency in the teaching process and learning. Education 4.0, with its progressive pedagogy is an element of equity, based on the concept of learning by doing, developing a culture of innovation, invention, problem solving, computational thinking, programming, coding, collaboration and culture of the creator within the horizon of STEAM skills.