



Romanian Science Teaching Policy in Early Education

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The project CREATIVE LITTLE SCIENTISTS has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 289081.

Goals of the research

In the frame of the “Creative Little Scientists” project we run a desk study on the policies existing at national level in relation to science and mathematics teaching and creativity development.

Based on the findings, a national report was prepared.



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Project frame

The backbone of the research is represented by the “Conceptual Framework” set by the project team with the main focus on two major components of basic questions [1]:

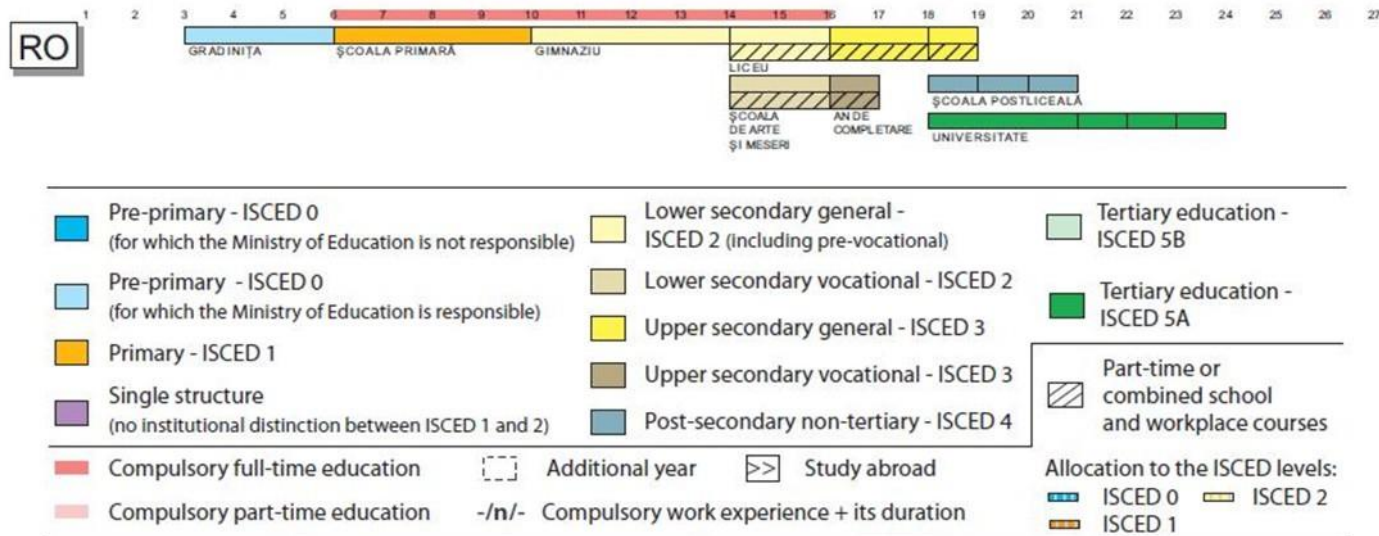
- a) approaches to **teaching, learning and assessment** (rationale or vision; aims and objectives; content; learning activities; teacher role/location; materials and resources; groupings; time; assessment);
- b) approaches to **teacher education** (initial teacher education; continuing professional development).



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Romanian educational system

The structure of the Romanian educational system according to the UNESCO's "International Standard Classification of Education", EACEA P9, 2009. Eurydice Key Data on Education in Europe Education, Audiovisual and Culture Executive Agency, ISBN 978-92-9201-033-1, DOI 10.2797/1715.



Source: Eurydice.



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National context

- the Romanian education system had undergone important changes as a new **Law of National Education** was promoted (2011) and came into effect.
- according to this Law, a **pre-school** preparatory class was added to the primary school education and a new vision on Early Education emerged.
- a new paradigm of teaching and learning in early years is promoted, shifting from knowledge transfers and reproduction towards understanding of the surrounding world, development of **key competences**, **active participation** of the **learner**, individual learning planning, **inter-disciplinary** approach, applied mathematics, **formative assessment**.



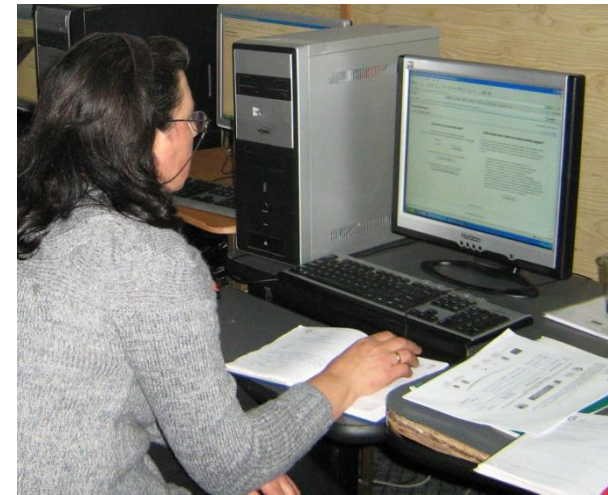
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Methodology of the study/ documents used (1)

The analysis is based on the desk research carried out over 100 documents available on-line.

Categories of documents:

- different versions of the **Law of Education**;
- laws and projects of laws concerning the pre-university education;
- **orders** of the Ministry of Education;





Methodology of the study/ documents used (2)

- **school curricula and pedagogical methodologies** on science, mathematics, technology and development of practical skills, environment and/or health education;
- official documents and **recommendations** on teachers' competencies and their training programs;
- **teaching plans** and curricula on ITE and master degree programs on education from major accredited providers;
- **best practice guides** for teaching science, mathematics and ecology;



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Methodology of the study/ documents used (3)

- **strategic plans** for the development of specific educational segments; recommended evaluation standards and norms;
- **national reports** on the educational system situation;
- **European reports** concerning pre-university education in which the Romanian educational system is presented/ analyzed;
- several **research papers** analyzing the pre-school or primary education.

The majority of the documents employed are official Romanian documents.



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The main conclusions of the report can be summarized as (1):

- 1) The reform of the Romanian educational system affecting aspects of science and mathematics education of young children started by the middle of the last decade of the XX century.
- 2) Today, this reform is still under way, as the new Law of National Education was adopted last year and **problems of its implementation** are present now.
- 3) A “revolution” in approaching Early Education arises with the new Law of Education and is supported by two additional projects of law. Only in the last three years several universities started to offer **courses and Master degree in Early Education**. For this reason, to speak about an established policy in this field, is a little bit hazardous.





The main conclusions of the report can be summarized as (2):

- 4) Only in 2012 the preparatory class was included in the compulsory educational system as part of primary school. Implementing this new system proved to be a difficult task, with a lot of unanswered questions. In this transitory regime, a smooth transition from the preparatory class to lower primary one seems to be a far to reach objective for the moment.
- 5) A change appeared also in approaching science and mathematics as they are planned to be taught in pre-school and primary school. Generally, science and mathematics are proposed as a common body of knowledge, mathematics being more applicative, closer to the real life situations.



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The main conclusions of the report can be summarized as (3):

- 6) The studied documents have **no focus on inquiry-based teaching**. Applying this method in science and mathematics teaching will be difficult to implement, as far as Romania is not prepared even conceptually for it. Nevertheless, some components embedded into inquiry-based practice can be found in the official documents (the role of **questioning**: children running investigations/ experiments; children attempting to **provide explanations**; the **role of observation**; pair and **group work**; encouragement of **autonomous learning**; **problem solving** approach; children expressing their **own ideas**; the use of various form of data recording; different approaches for **results communication**).

There is no single document or collection of documents addressing unitarily IBSE principles and methodology.





The main conclusions of the report can be summarized as (4):

- 7) A progression is noticeable in relation to students' achievements assessment, as the practice starts to shift from summative towards **formative**, continuous, more structured assessment.
- 8) Science and mathematics education do not target the formation of future scientists and engineers; it is directed towards the education of a knowledge and **aware citizen**, able to **understand the surrounding world**.
- 9) The use of **simple tools, devices and equipments** is encouraged. Much supported is the employment of **computers and digital devices** starting from early age.



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The main conclusions of the report can be summarized as (5):

- 10) The role of the educator is expected to change dramatically; he/ she become a **mentor, partner**, support person, **adviser, mediator**, observer, **discrete evaluator**.
- 11) Integrating science and mathematics with **other disciplines** and **outdoor activities** have to become a usual practice.
- 12) It is worth to mention that the theme of building knowledge on child **prior experience** is advocated in several documents.
- 13) **Project- and problem-based learning** is widespread recommended as science teaching methods.



Limitations (1):

- The **connections** existing or presumed to exist between creativity and science and mathematics education at early age, proved to be a quite complex one.
- Because time and man-power assigned to this task were limited, **few critics to policy documents** are present in the report, in spite of the fact that some scholarly papers were included.



Limitations (2):

- As the information is spread over tenths of documents it was difficult in some situations to reflect the **temporal evolution** of some ideas, as they progress or regress from government to government. Without any doubts, such a description would help a researcher to understand how educational policies changes along with political changes. In any case, **clear achievements are noticeable** in the efforts to improve, modernize and innovate **pre-school** and **primary education**.





Limitations (3):

- In the report development, efforts were made to locate not only **specific words** but also **similar meanings** or at least vague formulation of the investigated question. This approach of course induces the **personal bias** of the authors, reflecting their understanding, professional background, preferences. It is expected that the reader will overcome these limitations as he/she will be able to compare concurrent aspects revealed by the selection made.



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Impact (1)

- Through this study, a **coherent review** of the educational system “in use” as compared to European and international trends is available to Romanian educational **policy makers**.
- The report will help a more structured development of science and mathematics education in early age. The set of documents provides also the fundament for a sustained **promotion of IBSE principles and practices** in Romania.





Impact (2)

Such a set of documents will definitely assist Romanian educational policy makers, teachers' trainers, parents' organization and other stakeholders:

- to have an **integral view** on creativity and its connections with science and mathematics teaching and learning in Early Education;
- to **compare different official documents** addressing the subjects, documents issued in various political and economic contexts;
- to become **aware of the importance of creativity in Early Education**;



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Impact (3)

- to understand the EU's message in supporting IBSE in pre-school and primary school;
- to refer more easily to other similar educational approaches in Europe;
- to perceive in a more coherent manner concepts such as creativity, inter-disciplinarily, active and independent learning, social constructivism, assessment in learning;
- to design a better, more student centered curriculum and school lessons for young children.



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2. Sporea, D. and Sporea, A., Report on Mapping and Comparing Recorded Practices, National Report on Approaches in Romanian Policy, Creative Little Scientists project deliverable 3.2.



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Thank you !



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