Barbara Surma
ORCID: 0000-0001-8781-7643
Jesuit University Ignatianum in Krakow, Poland

Introduction

One of the greatest challenges of modern education is the society's scientific literacy. The concept of scientific literacy was first used in the American press in 1957, just after launching the first Sputnik spacecraft, but its definition still evolves.

The National Centre for Education Statistics defines scientific literacy as knowledge and understanding scientific concepts and processes needed to make personal decisions and participate in civil and cultural events (National Academy of Sciences 1996). And the Organisation for Economic Cooperation and Development (OECD) defines scientific literacy as the ability to become involved in the issues related to science and scientific ideas as a reflective citizen (*Pisa 2015: Draft science framework* 2013). Comparing scientific literacy with literacy understood as the ability to read and write, the authors of the project: "Scientific Knowledge in Preschool and School: the Suggestion for a New Methodology" (*Wiedza naukowa w przedszkolu i szkole* 2016) suggested a redefinition of this concept, saying that:

- its "objective is to make the students understand how scientific knowledge is formed, how it is modified and what kind of intellectual representation is used";
- "the new kind of scientific literacy has to be taught in such a way that it is pleasant for the students to make experiments, to deduce the laws of nature on the basis of natural and project models, and to read about science" (Ibidem: 20-21).

It is worth emphasizing that scientific education, including its process of literacy, may be introduced as early as in the kindergarten, or even earlier. While watching and exploring the world, children build their knowledge and start to define the laws governing nature. It is the first step towards STEM/STEAM education.

The subject of this issue of "Elementary Education in Theory and Practice" focuses on popularising the results of Polish and foreign research and programmes that develop

children's scientific competences. The authors of the articles explain what STEM/STEAM education is, and what its objective and effects are. They combine theory and practice in an effective manner, which is why the reader can get to know and evaluate its assumptions, as well as practical solutions. In the countries of the European Union, good practices that develop children's scientific skills are promoted because the society can grow economically and culturally only if it is based on knowledge.

Bibliography

National Academy of Sciences. (1996). *National Science Education Standards (Report)*, National Academy Press.

Pisa 2015: Draft science framework. (2013), http://www.oecd.org/callsfortenders/Annex%20IA_%20PISA%202015%20Science%20Framework%20.pdf (access: 15.11.2019).

Wiedza naukowa w przedszkolu i szkole: propozycja nowej metodyki. Projekt 2016-1-ES01--KA201-025282. (2016), https://www.cen.bydgoszcz.pl/images/Erasmus/guida/publikacja_granatowa-compressed.pdf (access: 15.11.2019).

ADDRESS FOR CORRESPONDENCE

Barbara Surma
Jesuit University Ignatianum in Krakow, Poland
e-mail: barbara.surma@ignatianum.edu.pl