SCIENCE TOPICS NETWORKING SEMINAR

EARLY STEM: WHAT ARE THE NEEDS OF TEACHER TRAINING TO EXPLORE STEM WITH THE YOUNGER STUDENTS

29th June 2022 (9:30 – 13:00 CEST), online

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Introduction

It is generally known that early childhood is the best time for learning language skills. Now more evidence suggest that STEM learning is just as important, and that it shares some key characteristics with learning languages at an early age**.**

Young children are curious little creatures that want to explore and understand the world around them. They use their STEM skills daily by building towers with blocks, collecting items, and organizing them, or observing nature and interacting with their environments through play. However, although science fascinates many children, the subject often seems to be lacking in Early Childhood Education and Care (ECEC).

On the one hand, ECEC practitioners do not feel confident about their own STEM knowledge and require professional development in all STEM fields. There is also a lack of specific content knowledge and skills in STEM areas and how to translate these concepts into the experience and language of the youngest learners. On the other hand, providers and parents assume that other priorities, such as literacy and numeracy, should come first in ECEC. At the same time, there is a lack of time for professional development.

Early STEM teaching should be reconsidered in the context of developmentally informed, playful learning and child-initiated activities, with special attention on problem solving and inquiry-based learning and teaching. When redesigning teacher education for ECEC we must consider the (future) teachers' need for science background information, for assistance in developing appropriate experiences, as well as the need for advice on how to explain scientific concepts to young children. We must also provide educators with on-going support.

Early learning programs that are appropriate for a child's development present opportunities to learn through play and hands-on exploration rather than directed academic curriculum. Through playful-learning activities children can acquire new knowledge, and connect it to their previous experiences, in a relaxed setting. Children will notice that when working in a group, they are more successful in building a block city than when they are working on their own. This also requires communication skills to articulate their ideas to their peers.

It is also well known that even though opening jobs in the STEM field are growing, the "leaky STEM pipeline" is expanding. The interventions to fix this issue are mostly focusing on secondary school and above, although students' attitudes about STEM are formed in early childhood. Therefore, investment in early childhood STEM education is needed to nurture the STEM identity of the natural-born scientists and engineers.

However, incorporating STEM at school is not enough, as teachers should encourage parents to continue the STEM exploring journey of their children at home. STEM learning improves through parents and teachers asking thoughtful questions, providing time and materials to explore, and offering a safe environment where the child can experiment. Parents need more guidance on how to offer STEM activities and play with their children to scaffold their learning.

Objectives

The aim of this STNS organized by Scientix and GFOSS is:

- To explore how teacher training can meet the need for science background information and skills of future ECEC educators.
- To reflect on the lessons learned from the experiences of teachers, researchers, industry partners, ministries of education and other key stakeholders.
- To provide a platform for exchanging knowledge and build a community around the topic of STEM teaching in ECEC.
- To agree on additional actions that could be taken to address Early STEM in the classroom and in teacher training programmes.

Programme

Time	Session
09:30 - 09:50	Welcome, tour de table and brief presentation on Scientix
09:50 - 10:10	Presentations from co-organisers GFOSS
10:10 - 10:55	**Session 1: Setting the scene** Introduction by INDIRE (National Institute for Documentation, Innovation and Educational Research, Italy MoE) Discussion by all participants
10:55 - 11:05	Break
11:05 - 11:50	**Session 2: Challenges and opportunities** Introduction by Staedtler Discussion by all participants
11:50 - 12:00	Break
12:00 - 12:45	**Session 3: Solutions and best practices** Introduction by Dublin City University Discussion by all participants
12:45 - 13:00	Summary of the event by Scientix

Target audience

This seminar is by invitation and will bring together up to 20 participants, including experts and projects working on the topic, as well as researchers, teachers, policy makers, Ministries of Education, and other interested education stakeholders, with experience on the topic, ready to discuss and put their heads together to come up with additional steps to solve the problem.

After the event

The organisers will collect ideas, comments and general conclusions agreed between participants during the event. The results of the discussion will be published in a Scientix Observatory article co-authored by all participants.

More information

Miriam Molina Ascanio miriam.molina@eun.org and Barbara Quarta barbara.quarta@eun.org