Newsletter #1

Latest updates in informal/nonformal STEAM learning

Welcome to SySTEM 2020 Newsletter

Dear reader,

Welcome to the first newsletter of the SySTEM 2020 project. We, the people behind the project, are located in 19 different countries, but all working towards the same goal. We believe that informal and non-formal STEAM learning has the potential of equipping our youth with the skills needed in the 21st century. Moreover, STEAM should be accessible to all regardless of their background and demographic and SySTEM 2020 is an important step in that direction.

It is with this belief in mind that we are trying to get to know this field better. We are taking a research practice approach to understand what best practices in the field are and how to better accredit our work. We aim to do this by looking at both the individual learners but also at the level of organisations and facilitators.

These newsletters are intended at anybody who is genuinely interested in STEAM and curious about the way it is taught outside the classroom. We will be sending these out every 4 months, keeping you up-to-date with the most important updates of the project and highlighting interesting developments in the field.

Today we would like to tell you or actually show you a bit more about who we are, but also to share the work that has been happening in the first 8 months of the
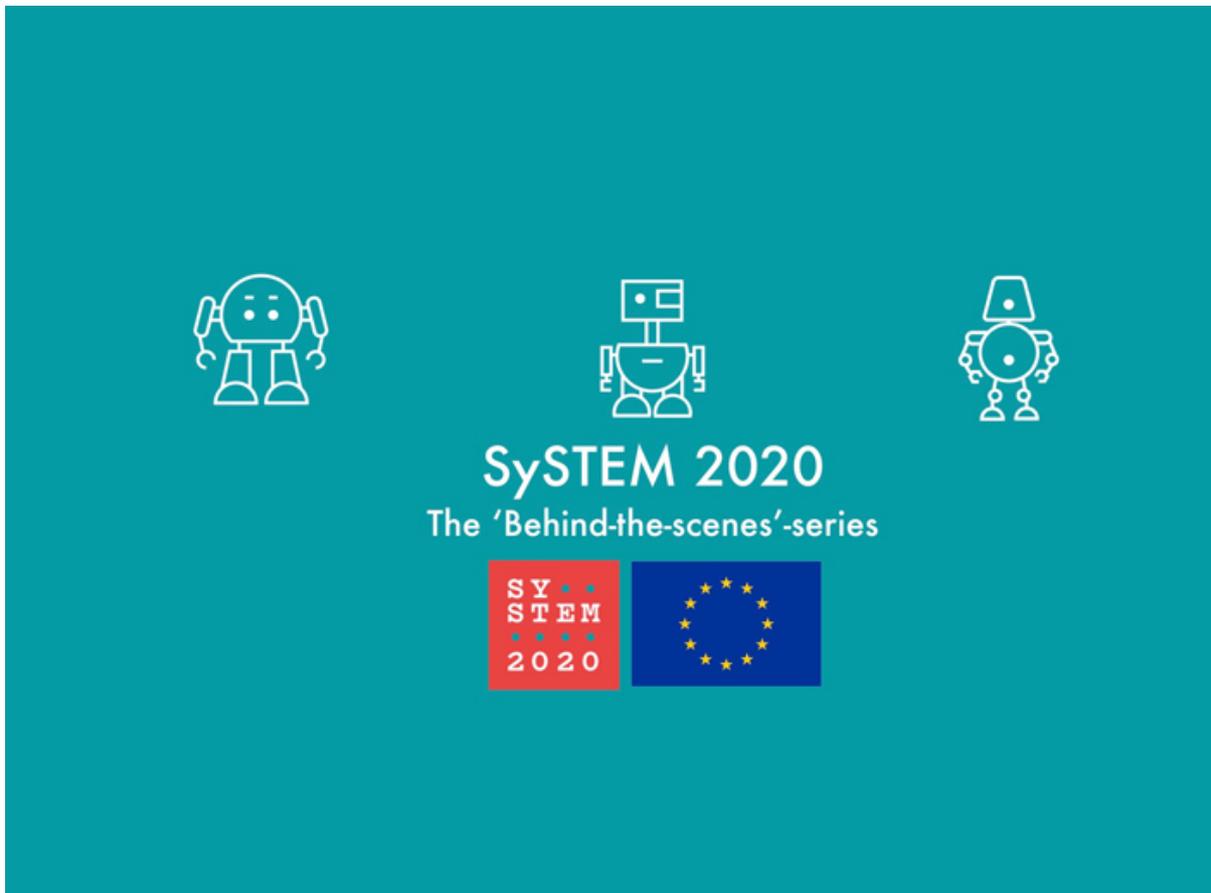
project. We hope you will enjoy this read and do let us know if you think there are interesting angles in the field that we should cover.

Mairéad Hurley
Education & Learning Manager at Science Gallery Dublin
SySTEM 2020 Principal investigator

People, faces, hopes and motivations behind SySTEM 2020

The communication of SySTEM 2020 is like the modern completion of Alexandre Dumas' battle cry in The Three Musketeers. We believe that partnership between people who want to contribute to the same aim needs to be promoted – internally and externally. It's with this idea in mind that we have decided to kick-start SySTEM 2020 communications campaign. We decided to give a humanised image of the people behind the project. We've asked all our partners to produce a creative and explanatory video about their personal motivation and the importance of SySTEM 2020.

Curious about the result? Watch our 'behind-the-scenes' video series [here](#)

What does the literature say about the definition of non-formal and informal learning?

Science Gallery Dublin have led the work on creating a White Paper on existing non-formal and informal learning frameworks in Europe. Its purpose is to do a systematic literature review of the field, identify the gaps, and finally to propose a consolidated framework that will provide the basis for future work in this project. Below we have tried to summarise the main findings.

Previous reviews have identified good practices for employing non-formal/informal STEAM education, however they have failed to tackle the challenges in the field, as well as standardise the plethora of programmes. In addition, inconsistencies in the definitions of informal/non-formal education have been identified. Some organisations even include opposite conditions to characterise learning as informal, formal, or non-formal; for instance, a definition of informal learning describes it as being intentional, while another as non-intentional.

Several papers mention frameworks that are often shaped or tweaked to fit the purpose of the activity being discussed. This indicates the need for a flexible and mobile framework that can span several situations, as frameworks can be optimised for each context.

There is no clear and obvious existing framework that we think the SySTEM 2020 project should use from the literature. As SySTEM 2020 will span several contexts, on the one hand it does need to bridge the variety of the contexts, and thus the definitions, but on the other hand it also needs to provide the required inclusiveness for various contexts, within the caveats of the limitations mentioned above.

Building on these frameworks SySTEM 2020 proposes the definitions for formal and informal science learning as presented by the National Centre for Vocational Education Research of Australia. The definitions were picked for their universality, i.e., their vertical and horizontal mobility and inclusiveness with regard to topics, subjects, levels, and contexts. That is, these definitions are functional for a variety of ages, countries, activities, abilities, and STEM topics.

Formal	Informal	Non-Formal
Learning that takes place through a structured program of instruction which is generally recognised by the attainment of a formal qualification or award (for example, a certificate, diploma or degree).	Learning resulting from daily activities related to work, family or leisure. It is not organised or structured (in terms of objectives, time or learning support). Informal learning in most cases is unintentional from the learner's perspective. It typically does not lead to certification.	Any organised and sustained educational activity that does not correspond exactly to the definition of formal education. Non-formal education may therefore take place both within and outside educational institutions, and cater to persons of all ages.

Hundreds of out-of-school STEAM learning providers in one place
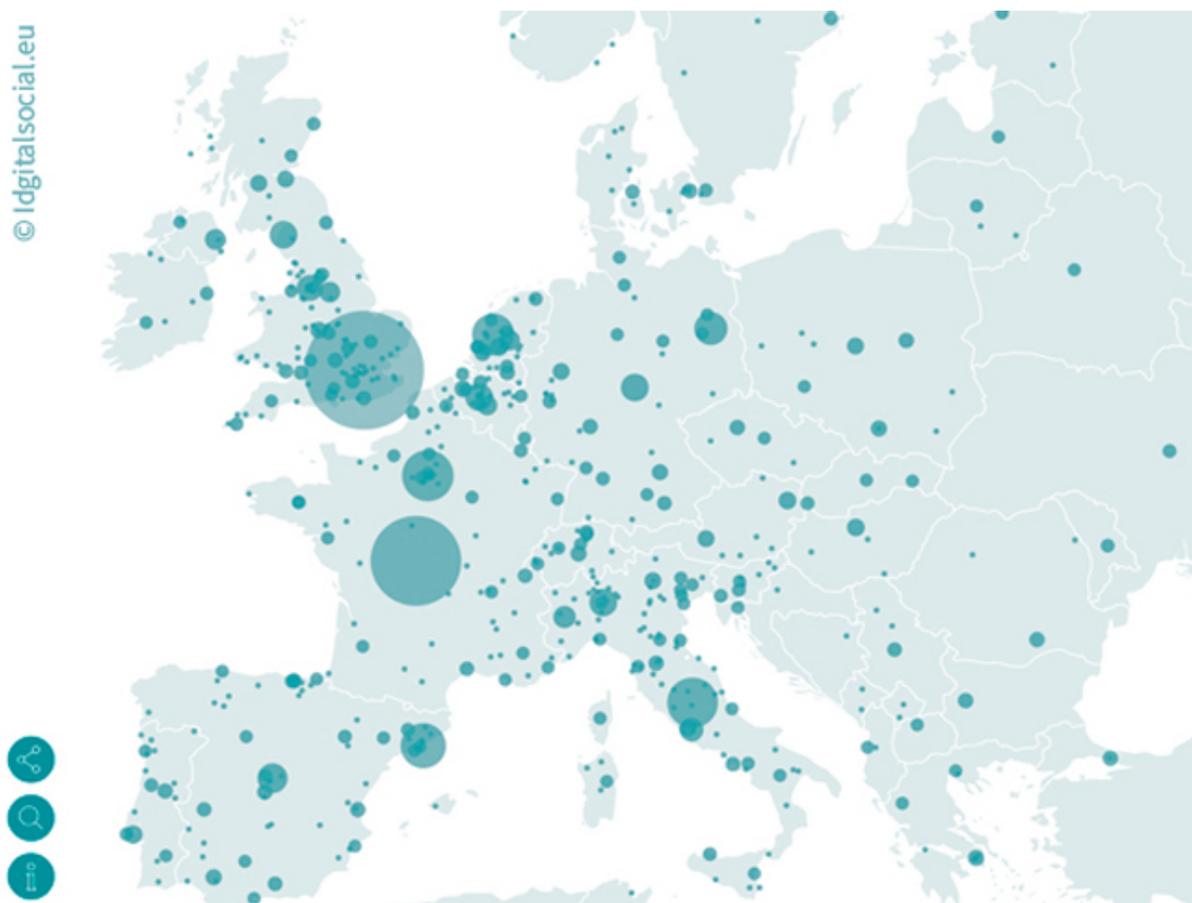
One of our project partners, Waag, is developing an online map where we aim to gather 2 000+ informal and non-formal education initiatives. This map will provide organisations active in the field visibility as well as a great way to connect with like-minded actors all around Europe. It will also help us gather data to gain further insight into best practices in STEAM learning happening outside schools. We are currently busy with the design and build of the map, but as of March 2019 it will become active, so keep your eyes and ears open.

GOOD READS
Articles and Books for you

1. An interesting article on tinkering and inclusion: A Talent for Tinkering: Developing Talents in Children From Low-Income Households Through Engineering Curriculum published in Gifted Child Quarterly
2. Two articles about STEM in early childhood are worth checking out. The first one in Forbes on Insights Into Early STEM Learning by Andrew B. Raupp, founder of stem.org. (USA) The second one comes from the European Journal of STEM Education by Hanno van Keulen from Windesheim University of Applied Sciences (NL).
3. The Spokes magazine has recently published an article on critical approaches in STEM learning ecosystems by Bronwyn Bevan from the University of Washington (USA)

🤖 Happy Holidays

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