



With the support of the
Erasmus+ Programme
of the European Union

GEEKS FOR
EDUCATION



TRANSFORMATIVE AND
CONNECTING COMPETENCES
FOR STE(A)M EDUCATORS:
THE G4E SELF DISCOVERY
TOOLKIT

INTRODUCING THE G4E SELF DISCOVERY TOOLKIT

<https://www.g4etoolkit.it/>



INTRODUCTION

Today, the ability of the educational system to be **inclusive and flexible** in responding to the growing diversity of learners on the one hand and providing its staff with the essential abilities to **engage students and foster a passion for learning** as a lifelong attitude on the other, are key factors in quality teaching and learning.

The G4E toolkit was developed during the project's initial stages, when partners worked under the **premise** that in order to provide students with meaningful, engaging, and inclusive STE(A)M learning experiences, our teachers and educators, or "our Geeks," should **reflect** on their own "teaching and training" skills. We also worked to provide a set of tools for the professionals working in schools and in the field to improve their skills.

For the sake of this toolkit and the entire G4E initiative, we assumed that our educators are **knowledgeable** in the disciplinary STEM and digital sectors. Instead, we intended to give them some knowledge and abilities that will enable them to **educate/train in a more interesting, interactive, and inclusive manner**.

The toolkit therefore focuses on **professionals, teachers, trainers, and educators from various backgrounds** who are involved in school education - both as curricular and extracurricular activities - and are dedicated to improving their skills, pedagogical approach, and forging new partnerships with the educational community to make STEM and digital skills more **relevant** to their students, as well as to **broaden** the student base while keeping in mind the gender divide and other aspects of their learners that may keep them away from taking up, or thrive on STEM and digital topics.

Transformative and Connected (teaching and) learning are two theoretical approaches that serve as our main sources of inspiration.

A theoretical approach to adult education is **TRANSFORMATIVE LEARNING**, according to Mesriow and others. In G4E, we primarily use this approach to refer to the shift and transformation of educator skill sets, based on increasing awareness, creating a trustworthy learning environment for inclusive education, developing relationships, and engaging in critical reflections.

The **Connected Learning Alliance** defines **CONNECTED LEARNING** as a general approach to equitable, social, and participatory learning that is driven by learners' **interests** and fosters **relationships** and joint creations that create **opportunities**.

The toolkit is an update of the initial "propaedeutic" tool created at the project's beginning and focuses on educators' skills by structuring them in a path of self-reflection that involves challenges and the application of one's own **values, attitudes, behaviors, and skills**.

The activities were partially **proposed** during the Joint Staff Training, which was held in November 2021 in Veneto, and **tested** in the seven participating countries by at least two "Geeky pigs" before being integrated and structured in the final toolkit, which upholds some principles of the earlier version while also considering feedback from the testing and the joint training.

The toolkit offers educators a way to **reflect, test, and better understand their strengths and weaknesses**, come to terms with their assumptions about teaching and learning, and gain a better understanding of the world framework and the competences that support it and can/should be activated or improved when taking on the role of educators and interacting with students of STE(A)M subjects.

In this toolkit, we move from STEM teaching and learning to a more promising STEAM (A for Arts and, in general, Human Expressions) approach, where the barriers between scientific disciplines and other disciplines need to be lowered to **permeate each other** and create **connections** with the **interests** and **motivation** of students.

The **emotional domain** is where meaning and understanding of the mechanics or scientific conceptions and rules - even when they remain a major role - are incorporated in a more human-focused education. This is where the "A" in STEAM education comes in. This is accomplished through fostering a **multidisciplinary** atmosphere in which **emotional learning, communication, and creativity** foster a more comprehensive and in-depth grasp of STEM fields. This is true for both teachers and students, and it encourages a deeper understanding of the elements of STEM and digital learning that can be adapted to various academic levels, learning modalities, and learning styles.

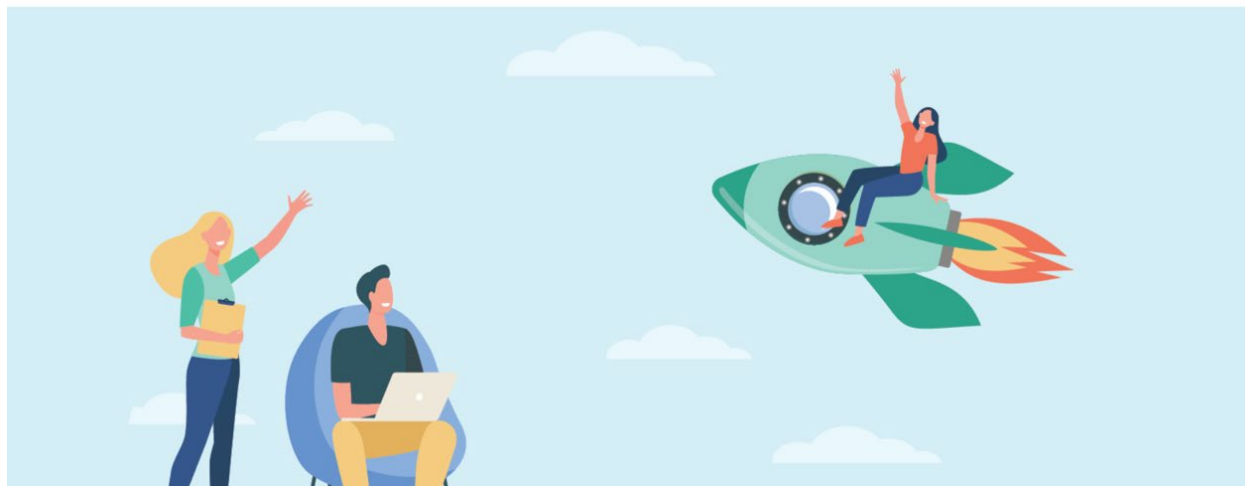
In this toolkit, users will find both general and targeted activities that can help in understanding the primary mechanisms that trigger the activation of **"soft"** skills/competences, as well as the direct application of specific abilities in various contexts, including classroom settings, through

simulations, challenges, games, and playful activities. The majority of them are adaptations of participatory and experiential learning strategies.



TOOLKIT

[Home](#) [About G4E](#) [The Toolkit](#)



We live in a world of "frameworks" because of the complexity of our times, and this is true of education particularly. Instead of starting from scratch and developing its own framework, G4E chooses a few elements and strategies that are already well-known and serve as a benchmark for the European Union.

We have identified **three such frameworks** that have been used as reference and inspiration for the project, so that its value can go beyond the partnership and can be applied in other contexts and countries.

The first the **DIGCOMPEDU**, the digital competences of educators. It is the only framework chosen that directly addresses the competences of educators.

The second one is the **Key Competences for Lifelong Learning** (May 2018).

The third is the proposed **Life Competences Framework** (2019) that applies to learners in formal, non-formal and informal education and learning.

The toolkit and the suggested activities are organized according to the three macro-categories specified in the DIGCOMPEDU framework, rather than in categories of "soft skills" or abilities.

The framework is used as inspiration and to develop a **transferable** approach because we are not solely focusing on "digital" competences and the functional use of digital tools and technologies to carry out professional and educational tasks, but rather work on a **wider approach** of connected and transformative competences to teach, transfer, and promote the uptake of STE(A)M disciplines.



THE TOOLKIT'S FEATURES AND PARTS



1. Framing G4E

A methodological premise to the toolkit.

[Read more](#)



2. Rebooting pedagogy

Some theories that can be applied in the learning context and an overview of general educational approaches.

[Read More](#)



3. Using the toolkit

The activities proposed come from experiential, non-formal and play-based methods.

[Read More](#)



4. Professional engagement

Looking into our geeky shelf.

[Read More](#)



5. Empowering learners

Tools for educators to share power and build trust, relations and capabilities.

[Read More](#)



6. Teaching and Learning

This set of activities is a three-step set of teaching/training assignments.

[Read More](#)

Taking cues from non-formal education and other theoretical frameworks, **Part Two “Rebooting pedagogy”** provides an overview of educational approaches and specific methods that correspond to educational practice that shifts the traditional settings of formal education. Learners are placed at the center of the learning action, and teaching methods are "rebooted" to engage and motivate. In this section of the toolkit, we provide some **positive psychology and other social studies theories** that can be used in both formal and non-formal or informal learning contexts. The primary specific methods that can be employed in the classroom are then listed after providing an overview of broad educational approaches.

The **Third Part “Using the Toolkit to Improve Professional Competences”** supports those interested in using the toolkit to **structure short or longer paths for training "geeks"** in soft, transformative, and connected teaching styles by providing information and guidance on the skills and professional profiles of those trainers/facilitators who are called to lead and facilitate

the potential paths. It offers advice on how to lead and facilitate, as well as a variety of tools for feedback and assessment, as well as strategies for documenting learning and awareness.

In parts **Four, "Professional Engagement"**, **Five, "Empowering Learners"**, and **Six, "Teaching and Learning"**, we refer to the major DIGCOMPEDU categories and provide games, simulations, activities to enhance key (mostly soft, but also cognitive and creative) skills as well as specific "development settings". This indicates that activities and skills are best tested and developed in optimal contexts. The individual, group, and classroom environments are the three main settings identified, and most activities are designed to be effective in each of these situations.

Although the toolkit focuses on the professional development of educators, many of the activities it contains can be **modified, adapted and used to improve different learner skills** related to the framework of the 8 key competences.

The toolkit is available in English but since you are probably a Geek, you will find ways to translate its content in *your language*.



For more information about the project and the other resources we have made available for you, check out our website: <https://www.geeks4education.eu/>

