

Unveiling the Occupational Profiles of Inclusive STEAM Educators in K-6 settings

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Abstract— This research paper explores the integration of Inclusive and STEAM Education within K-6 settings, highlighting the scarcity of evidence on adapting educational practices to accommodate this fusion. To address the demand for skilled professionals in STEM fields, particularly computer science, and engineering, it proposes four new occupational profiles for educators in Inclusive STEAM environments: Inclusive STEAM primary school teacher, STEAM special educational needs primary school teacher, Inclusive STEAM learning support teacher, and Inclusive STEAM pedagogy expert. The paper introduces these occupational profiles by utilizing qualitative research methods and involving teachers and teachers' associations from Bulgaria, Cyprus, Greece, and Spain. It, also, aligns these profiles with competences drawn from the Inclusive STEAM Educator's Competence Framework, adhering to ESCO guidelines for the internationalization of jobs. The paper underscores the importance of tailored educational roles and competences in fostering inclusivity in STEAM education, contributing to a more equitable access to STEM careers.

Keywords— STEAM Education, Inclusive Education, Inclusive STEAM Education, competences, roles, occupational profile

I. INTRODUCTION

A. STEM, STEAM and Inclusive STEAM Education

Integrating Science, Technology, Engineering, and Mathematics, STEM education focuses on real-world applications [1] and evolves with technological advancements and the changing needs of future labor markets [1, 2]. As technology becomes more integral to professional sectors, the demand for a workforce skilled in these interdisciplinary fields and innovative problem-solving has increased [3, 4]. Thus, STEM education has been refined to meet these demands, preparing students to navigate current and future technological challenges [5].

In recent years, the notable influence of creativity and the arts in fostering collaboration, innovation, and problem-solving has prompted an expansion beyond the traditional STEM framework to the STEAM (Science, Technology, Engineering, Arts and Mathematics) approach [6-8]. The 'A' in STEAM, while variably interpreted in scholarly discourse [9-11], generally includes a range of subjects such as visual arts, music, drama, dance, literature, and history. These disciplines create a comprehensive educational framework emphasizing creativity, expression, and human-centric design, essential for innovative problem-solving [12]. By integrating the arts into the STEM

curriculum, STEAM education enriches technical training with creative processes and a deeper understanding of cultural and societal contexts [13-15]. This integration emerged in recognition of the vital role arts and creativity play in enhancing the technical and analytical skills fostered by STEM [6-8]. Additionally, including the Arts in STEAM boosts students' motivation and curiosity about applying scientific and technical knowledge to real-world scenarios [16]. The benefits of STEAM education are evident through various implementations in daily K-6 school practices. One example is using Engineering Design Process-based STEAM activities through tales with 68 students aged 6-6.5 years [17]. These interventions positively developed students' creativity and problem-solving skills [17]. Similar successes are seen in thirteen interdisciplinary STEAM projects with pre-K and K1-2 students [18] and three transdisciplinary STEAM projects with 152 gifted K5-6 students [19], highlighting the added value of STEAM approaches in fostering students' development.

While STEAM education offers numerous advantages, it is important to consider whether it provides equal opportunities for all students, including those with disabilities [20]. As societal perceptions have evolved, recognising the rights of students with disabilities, led to their inclusion in mainstream classrooms where they participate in the same activities as their non-disabled peers [21-24]. Creating a well-designed inclusive learning environment is essential in K-6 educational settings, where students are in a formative stage of development [25,26], and their experiences influence their future growth [27]. Such an environment should cater to all students' needs and talents, accommodate different learning styles, and foster collaboration, awareness, mutual understanding, and support, creating a sense of belonging [28].

However, evidence of inclusive learning environments in STEAM K-6 settings is limited. Practical implementation of inclusive practices in STEAM primary classrooms with students with disabilities shows limited results for both K-6 [29-31] and Pre-K settings [32,33]. Additionally, two of the three empirical studies on K-6 [30,31] describe STEAM interventions in resource rooms within inclusive schools but without non-disabled peers. While these interventions may not be fully inclusive, they provide valuable insights into the benefits of STEAM education for students with disabilities, particularly in enhancing academic performance, problem-solving skills, confidence, motivation, creativity, self-assurance, and metacognitive abilities [30,31].

B. Educators' challenges and needs in Inclusive STEAM Education

Despite the benefits of Inclusive STEAM Education in all students' development, there is limited research on the attitudes, challenges, and needs that K-6 educators face. Our primary knowledge in this field stems from funded research projects such as Erasmus+ projects STEAM4SEN [34] and SpicE – Special Education STEAM Academy [35]. Moreover, some studies primarily focus on Inclusive STEAM and STEM Education [29-33,36], which, while not centred directly on educators, offer insights into areas such as classroom instructions, student profiling and assessment methods. They also provide valuable information regarding educators' needs and challenges, including specific professional development, planning, dedicated activities, class schedules, course loads, and the development of self- or peer-assessment methods. Furthermore, the findings of two studies [37,39] support the necessity for co-teaching arrangements where STEM education teachers and special education teachers collaborate within the same classroom, an approach characterized as effective for educating students with disabilities in inclusive STEM environments. The study in [40] revealed that teachers in Science, Technology, and Mathematics tended to engage in fewer professional development opportunities, dedicating fewer hours to professional development regarding students with categorical disabilities. Moreover, the study in [41] revealed that collaborative activities such as short-term working conferences can significantly impact STEM educators' preparedness, responsiveness to accommodations, and attitudes toward including students with disabilities. Finally, the study in [38] revealed a lack of certification credentials in Inclusive and STEM Education fields for mainstream and special educators of Inclusive STEM classrooms.

Understanding the support that educators need and fostering effective collaboration in inclusive STEAM environments is critical [12]. Defining educators' roles can support the creation of tailored training programs, ensuring they receive relevant resources to implement inclusive, innovative STEAM teaching strategies. This role clarity also facilitates collaboration, allowing educators to maximize their strengths within the STEAM framework [12,36]. Ultimately, this approach ensures all students benefit from a well-prepared [37, 38] and efficiently qualified educators' team.

C. The Inclusive STEAM Educators' Competence Framework

In this context, through the SpicE project, we have worked towards developing and proposing different occupation profiles for K-6 Inclusive STEAM Educators based on the Inclusive STEAM Educators' Competence Framework [42]. The Inclusive STEAM Competence Framework expands on the existing STEAM Competence Framework [12] and is organized into four levels. At the top level, it identifies five main educators' roles in Inclusive STEAM environments. The second level outlines sixteen areas of these roles, and the third level lists forty-two competences educators need for effectiveness. The final level provides practical examples to facilitate application in educational practice. This framework serves as a roadmap for everyday teaching in Inclusive STEAM K-6 environments, a teachers' self-assessment tool, and a guide for policymakers and stakeholders in developing professional development programs.

Fig. 1. presents the two first levels of the Framework, which are the five identified teachers' roles and the sixteen identified dimensions of those roles.

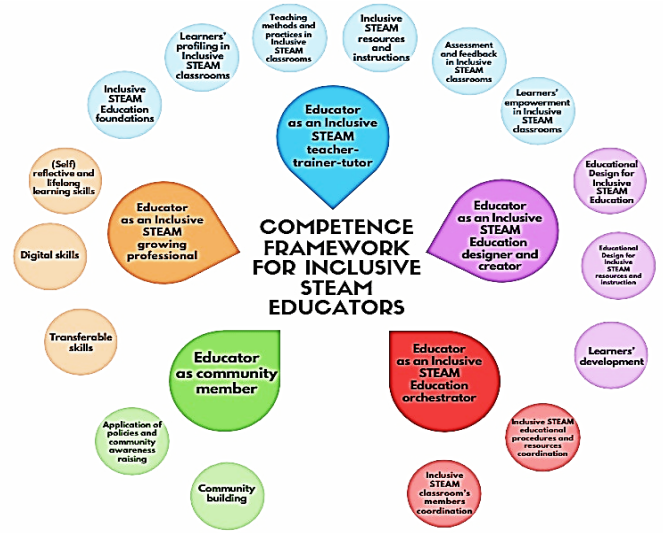


Fig. 1. The two first levels of Inclusive STEAM Competence Framework

D. Research questions and paper's structure

Given the sparse representation of the necessary combination of Inclusive and STEAM competences [37,38], the research questions guiding our study were as follows:

1. *How many educator roles are needed in K-6 Inclusive STEAM environments to ensure the success of any intervention?*
2. *What competences should each of those educators develop based on the Inclusive STEAM Competence Framework?*
3. *What are the instructional and collaboration schemas that those educators implement?*

This study introduces the initial prototype of the identified profiles and their potential applications. These profiles adhere to the European classification of Skills, Competences, Qualifications, and Occupations (ESCO), as ESCO had not yet offered corresponding occupational profiles at the time of this study [43-47]. Following ESCO rules is important because it ensures the profiles align with a standardized framework, promoting consistency and recognition across EU member states. This alignment facilitates mobility and collaboration among educators and helps develop relevant and effective professional development programs. The proposed occupational profiles are expected to contribute to the successful implementation of STEAM practices in Inclusive K-6 settings for students with disabilities, protecting them from potential educational and social exclusion or marginalization.

The structure of the rest of this paper is as follows: After this introduction, Section 2 provides the applied methodology and the results of each of its steps. Section 3 presents and discusses the findings based on the results of the literature review. Finally, Section 4 offers conclusions, presents the next research steps, and discusses their implications.

II. METHODOLOGY

A. Research method

To develop the initial version of the occupational profiles, we combined the first three steps of the prototyping method—needs collection, design, and evaluation—commonly used in computer engineering [48] with the initial steps of an established methodology for competence development. These steps included needs analysis, document analysis, literature review, exploratory interviews, focus group interviews, pilot studies, and validation studies [49]. This integrated approach is depicted in Fig. 2.

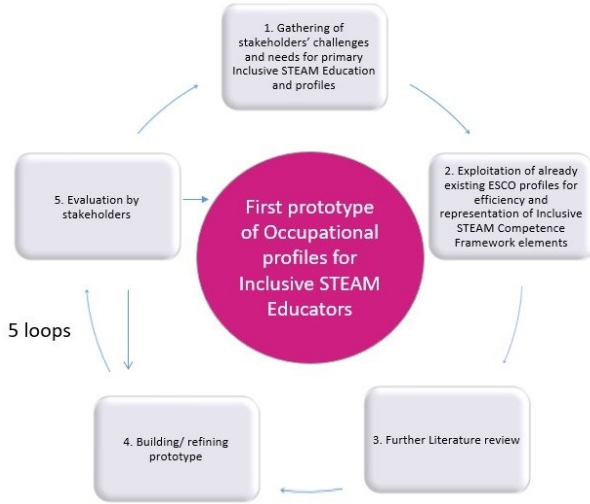


Fig. 2. The integrated prototyping research method

B. The method's first step

For the first step, we identified stakeholders' challenges and needs for K-6 Inclusive STEAM Education and job profiles. This was done by analyzing the results from a needs analysis survey with teachers conducted during the first year of the SpicE project [35] and by reviewing the literature on competencies for educators and framework development [29-31, 34, 36-41]. The results of this analysis revealed the presence or the need for more than one educator in the Inclusive STEAM classroom [29-32, 36-39, 41] and the presence or the need for at least a special educator [37-39] or support staff [36] in such setting. Additionally, it highlighted the need for certification credentials in both Inclusive and STEM Education for all educators in inclusive classrooms [37, 38], supported by the widespread need for professional development in both fields, as shown in numerous studies [35-38, 41].

C. The method's second step

For the second step, we reviewed existing K-6 occupational profiles in the ESCO database to determine if they included knowledge and competences from both Inclusive and STEAM fields. The ESCO database acts as a commonly accepted European dictionary, describing, identifying, and classifying professional occupations and their descriptive elements (job description, knowledge, skills, competences) [50]. For each job profile, ESCO provides a brief explanation of the occupation, a list of specialists within the scope of the occupation, a hierarchical relationship with other occupations, and two groups

of knowledge, skills, and competences classified as essential and optional. Essential knowledge, skills, and competences are relevant regardless of work context, employer, and country, while optional ones depend on these parameters. Thus, we utilized the ESCO database to review existing K-6 profiles, including the primary school teacher [43], special educational needs teacher (primary school) [44], learning support teacher [45], learning mentor [46], and assistive technologist [47]. Prior research on STEAM educator profiles [54] indicates the necessity of a team of educators with varying STEAM roles and auxiliary positions, such as STEAM educator's assistant, STEAM lab expert, STEAM pedagogy expert, and STEAM coordinator. To evaluate the effectiveness of these profiles in Inclusive STEAM Education, we used the knowledge and competences from our newly formulated Competence Framework [42] as a roadmap. Then, we assessed whether the framework elements were significantly represented in the ESCO profiles. This analysis revealed a limited representation of STEAM competences across all ESCO profiles [43-47] and a lack of Inclusive/Special Education competences in the general primary school teacher profile [43].

D. The method's third step

For the third step, we conducted a deeper literature review to identify the educators' profiles needed in Inclusive or STEAM classrooms and determine which would suit Inclusive STEAM Education. The Inclusive Education literature [51-55] showed that at least two educators' profiles are essential in Inclusive classrooms: the mainstream teacher and the special education teacher [51-53, 55]. These profiles were consistently mentioned as core to Inclusive classrooms across multiple studies. Additionally, other profiles, such as the learning support teacher [54], resource teacher [54], and special education assistant [55], were also noted. From the STEAM literature [56-58], two key profiles emerged as necessary in STEAM learning environments: the STEAM teacher [56-58] and the STEAM support staff or assistant [56-57]. Additional profiles identified as necessary in these contexts included the STEAM lab expert, STEAM pedagogy expert, and STEAM coordinator [56].

E. The first evaluation loop (steps 4 and 5)

Then we conducted the initial assessment loop by implementing steps four and five. At first, we synthesized the findings from the previous three steps to create the first draft prototype of the profiles needed in K-6 Inclusive STEAM settings (step 4). We determined that four profiles are essential: a) Inclusive STEAM primary school teacher, b) STEAM special educational needs primary school teacher, c) Inclusive STEAM learning support teacher, and d) Inclusive STEAM pedagogy expert (or mentor). These draft profiles were named based on the corresponding profiles found in the ESCO database [43-46] and provided initial insights into their roles and responsibilities.

Then, we proceeded to their evaluation (step 5) through exploratory interviews with educators. In this case, we interviewed six primary teachers: two pre-service (one general, one special) and four in-service (two general, two special). Participants were selected using convenience sampling to include general and special education teachers. Participants were asked about the ease of implementing Inclusive STEAM Education, whether it could be successfully implemented by a

classroom teacher alone, and which educator profiles are necessary for its proper implementation. One researcher conducted the interviews, while two independent researchers observed and took notes. These notes were compared, and the results were derived collectively. All six participants agreed that Inclusive STEAM Education is complex and cannot be implemented by a single classroom teacher. They also expressed concerns about their self-efficacy in STEAM Education, with in-service teachers also highlighting concerns about special education issues. Regarding the required profiles, all participants agreed on the need for a mainstream and special education teachers. Most participants, except one in-service teacher, emphasized the need for various paraprofessionals, such as parallel support teachers, particularly for students with profound disabilities. Additionally, two general in-service teachers and one pre-service special education teacher suggested the inclusion of a mentor.

F. The second evaluation loop (steps 4 and 5)

We initially validated our assumptions about the required profiles and proceeded to the second evaluation loop. In this loop, we initially refined our occupational profile draft prototypes, adding notes and findings from the previous loop (step 4). Then, we conducted focus group interviews (step 5) with three in-service general education teachers, three in-service special education teachers, and two headmasters (one from general education and one from special education). The sample was selected using convenience, and two independent researchers observed the entire process. The experts were asked to assess: a) whether the four identified profiles from the previous steps are necessary for successful implementation of Inclusive STEAM Education in K-6 settings, b) whether existing profiles in the ESCO database [43-46] are sufficient for Inclusive STEAM K-6 educational settings, and c) if new profile codes for Inclusive STEAM Education should be added to the ESCO database. The focus group discussions confirmed the necessity of the four initially proposed profiles and highlighted the lack of STEAM representation in existing ESCO profiles. All participants emphasized the need to include the new proposed profiles as a distinct category in the ESCO database.

G. The third evaluation loop (steps 4 and 5)

We proceeded to the third evaluation loop with further indications for the names of the four needed profiles. In this loop, we refined our occupational profile drafts prototypes, enriching them with notes from the previous loop (step 4). Then, we conducted a pilot study (step 5) involving nine teachers through asynchronous email communication. The participants included one in-service general primary education teacher with special education experience, one special primary education teacher with general education experience, one pre-service general primary education teacher, one pre-service special education teacher, one art teacher with experience in both settings, one computer teacher with experience in both settings, one school nurse, one learning assistant teacher, and one speech therapy teacher. Participants received emails detailing the procedure and requesting their contribution. Upon their approval, they were provided with the array of competences from the newly formulated framework [42] and asked to categorize these competences into "essential" and "optional" for each of the four identified job profiles based on ESCO standards.

Additionally, they were asked to evaluate the sufficiency of these profiles for the successful implementation of Inclusive STEAM Education and to provide further comments and suggestions. All participants highlighted the sufficiency of the identified profiles and provided their thoughts for their description and conceptualization.

H. The fourth and fifth evaluation loop (steps 4,5 and exit)

In the fourth evaluation loop, we created prototypes of the four occupational profiles, detailing their essential and optional knowledge, skills, and competences. Based on these components, we wrote their descriptions (step 4) and proceeded to validate the prototypes (step 5). Non-academic partners of the SpicE project, including representatives from primary educators' schools, unions, and continuous education providers from Bulgaria, Cyprus, Greece, and Spain, were asked to assess the applicability, significance, and sufficiency of the profiles and their components. All partners approved the profiles' structure and descriptions, providing only minor comments. In the fifth loop, we integrated these minor changes into the existing profiles (step 4) and conducted the final validation round, asking partners to confirm their agreement with the changes (step 5). All partners approved the changes, leading to the final prototypes of the profiles.

III. RESULTS AND DISCUSSION

The previous research led to the design of four occupational profiles for K-6 Inclusive STEAM educators. Each profile delineates specific responsibilities and prerequisites regarding knowledge, skills, and competences, as detailed in the ANNEX. These profiles are linked to various instructional schemas and describe the collaboration between professionals. They propose a code for including the occupation in the existing ESCO database. They describe each profile, alternative names, the proposed position in the ESCO database, and fields of essential and optional competences and knowledge. Additionally, they suggest the academic degree level required for each profession based on the initiatives of the European Qualification Framework (EQF) [59].

A. The four occupation profiles

The occupational profile of an Inclusive STEAM primary school teacher, the main teacher in an Inclusive STEAM primary classroom, is designed to address the needs of all students, regardless of their diversity. This teacher must possess knowledge and employ approaches reflecting STEAM and Inclusive Education principles. This teacher should also understand students' needs and learning profiles and be capable of designing, implementing, and assessing Inclusive STEAM curricula, lesson plans, activities, resources, and instructions based on these needs and profiles. This ensures the development of students' STEAM competences and their awareness and engagement with diversity. Furthermore, the Inclusive STEAM teacher should collaborate with the special educational needs primary school teacher, Inclusive STEAM learning support teachers, other teachers, principals, parents, and paraprofessionals. This collaboration involves providing appropriate feedback from educational interventions and seeking input and assistance regarding student needs. The teacher can request support from the Inclusive STEAM pedagogy expert for pedagogical aspects.

The STEAM special educational needs primary school teacher also plays an active role in Inclusive STEAM settings. This teacher primarily addresses students with special education needs or other learning diversities while helping other students develop awareness of diversity issues. This teacher must also have knowledge of STEAM, Inclusive, and Special Education philosophies, principles, and strategies, as they are responsible for providing specially designed STEAM instruction to their diverse group of students. This teacher focuses on designing, implementing, and assessing differentiated and individualized teaching approaches, lesson plans, activities, resources, and instructions to support these students in mainstream settings, adapting the main teacher's materials as necessary. The STEAM special educational needs primary school teacher bases any methods used on students' needs, strengths, and weaknesses, assisting the main teacher in better understanding these factors and seeking further identification and feedback through collaboration with learning support teachers, other teachers, parents, and paraprofessionals. This teacher should also provide progress feedback to all stakeholders and can seek support from the Inclusive STEAM pedagogy expert.

The Inclusive STEAM learning support teacher has a more focused role in primary mainstream settings. This teacher primarily supports one learner with more profound difficulties, aiding their participation in Inclusive STEAM activities. The Inclusive STEAM learning support teacher develops the student's basic skills in STEAM-related disciplines, such as numeracy and literacy. This teacher supports the student in joining STEAM activities and projects plans learning strategies for successful inclusion and participation and continuously identifies and monitors the student's needs and progress to inform their pedagogical decisions. The Inclusive STEAM learning support teacher closely collaborates with the STEAM special educational needs primary school teacher, parents, and paraprofessionals, following the directions of the main teacher. This teacher provides feedback to teachers, parents, paraprofessionals, and other stakeholders responsible for the student's progress, and can also seek support from the Inclusive STEAM pedagogy expert.

Finally, the Inclusive STEAM pedagogy expert serves as a mentor throughout the process. While primarily assisting the lead teacher, the Inclusive STEAM pedagogy expert also supports the other two teachers in their teaching and learning processes. This expert uses and suggests various practical and equitable Inclusive STEAM teaching approaches in the classroom, helping all educators design and adapt STEAM curricula, activities, projects, resources, and tools using Inclusive frameworks and techniques. This expert continually enhances knowledge and skills in Inclusive Education, STEAM Education, and Inclusive STEAM Education. Additionally, this expert collaborates with community members to better implement STEAM Education activities and projects, fostering awareness of Inclusive Education, its necessity, and its needs.

B. Discussion

These four occupational profiles aim to establish an initial skillset, defining the responsibilities and roles of various educators within K-6 Inclusive STEAM educational settings. They, also, discuss the successful development of the

competences associated with each profile. Developed in response to the identified need for certification credentials in Inclusive and STEM Education for all educators in Inclusive STEAM classrooms [37, 38], this process revealed a limited representation of STEAM Education initiatives in existing ESCO occupational profiles [43-47]. Consequently, there is a clear need for a new profile category that adequately represents STEAM and Inclusion dimensions.

Additionally, based on the needs identified in previous research [29-32,39,41] concerning educators' collaboration within Inclusive STEAM or STEM classrooms, our study aimed to properly define collaboration schemas and the roles of each educator to eliminate overlaps [39] in their responsibilities. This further illustrates the critical role of structured collaboration for successful inclusion in STEAM classrooms. Our study analyzed Inclusive STEAM and STEM literature, revealing the presence of mainstream teachers and special educators [37-39, 51-53,55] or support staff teachers [36,54] and extended this to highlight both the Inclusive and STEAM dimensions [37-38]. By adding the profile of the STEAM pedagogy expert [56] and incorporating a combination of Inclusive and STEAM education competences into all profiles [42], our research suggested a new category to be included in the ESCO database to reflect and clarify the complex roles of Inclusive STEAM K-6 educators.

IV. CONCLUSIONS AND FUTURE DIRECTIONS

This paper presents the initial steps in developing occupational profiles for K-6 Inclusive STEAM educational settings based on a newly formulated Educators' Competence Framework [42]. Four profiles were identified as crucial: the Inclusive STEAM primary school teacher, the STEAM special educational needs primary school teacher, the Inclusive STEAM learning support teacher, and the Inclusive STEAM pedagogy expert. Those profiles consist the main contribution and innovation of the study as present a need of inclusion in ESCO database of a new group of professions for Inclusive STEAM Education with predefined roles, competences, knowledge and collaboration and instructional schemas.

Our findings lay the groundwork for further research on educators' roles and requirements in Inclusive STEAM K-6 classrooms. A follow-up study will involve international educators and stakeholders to explore these issues using mixed-method research and triangulation. This study will also assess the proposed profiles' suitability for K7-12 settings. The overall results can provide a solid roadmap for policymakers, educators, and stakeholders in designing targeted professional development programs, ultimately enhancing the quality and effectiveness of Inclusive STEAM education. They can also open the discussion on recognizing STEM, STEAM, and Inclusive STEM and STEAM specialists in various occupations, supporting the establishment of this new career category.

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ANNEX

Name	Inclusive STEAM primary school teacher
Code	2343.1
Description	Inclusive STEAM teachers at primary schools educate students using approaches that reflect the STEAM and Inclusive Education philosophy and principles. They focus on inclusive teaching approaches that use Science, Technology, Engineering, the Arts and Mathematics as access points for guiding all students’ inquiry, dialogue and critical thinking, facilitating the development of all students’ needed competences as defined by labor markets and future societies. Inclusive STEAM teachers in primary schools, design Inclusive STEAM curriculums and lesson plans in line with STEAM related disciplines curriculum objectives and inclusive goals and instruct students in an accessible, for all, learning environment that respects and engages diversity and encourages them to participate, collaborate and solve problems. They monitor all students’ learning development and evaluate their knowledge and skills on the subjects taught, building, in addition, their courses content on the students’ prior knowledge and skills. They use appropriate resources, instructions and teaching methods to create an inspiring Inclusive STEAM learning environment, giving appropriate feedback for all the above to all stakeholders.
Alternative label	Inclusive STEAM teacher primary school, STEAM primary school Inclusive teacher
Hierarchy	2- Professionals, 23- Teaching professionals, 234- Primary school and early childhood teachers, 2343- Inclusive STEAM educators in primary school (new)
Essential skills and competences	Apply knowledge of Inclusive and Special Education, Apply knowledge of the STEAM Education approach, Identify and examine the impact of STEAM Education in Inclusive Educational Environments, Assess, analyze and monitor learners’ needs in Inclusive STEAM context, Develop learners’ profiles for Inclusive STEAM Education, Integrate learners’ prior knowledge and skills in Inclusive STEAM Educational procedure, Apply Inclusive STEAM teaching and learning techniques, Apply teamwork methods and group dynamic methods for collaborative learning educational activities and projects, Use appropriate resources and (Assistive Technology) tools according to learners’ needs in Inclusive STEAM activities and projects, Provide appropriate instructions according to learners’ needs and profiles in Inclusive STEAM activities and projects, Assess and analyze individual learners’ activity/ project performance, Assess and analyze group dynamics and interrelationships, Provide appropriate feedback to all stakeholders, Develop learners’ STEAM portfolios, Ensure accessibility and Inclusion in Inclusive STEAM Educational procedures, Ensure all learners’ active engagement in Inclusive STEAM activities/ projects, Promote learners’ confidence and self-efficacy in Inclusive STEAM activities/ projects, Design and adapt Inclusive STEAM education curriculum of STEAM related general and special education disciplines, Design and adapt Inclusive STEAM education course/lessons, Design and adapt Inclusive STEAM education activities and projects, Identify and select appropriate resources and (Assistive Technology) tools for Inclusive STEAM Education, Design, create and adapt appropriate resources and instructions for Inclusive STEAM Education, Facilitate all learners’ STEAM competences, Facilitate all learners’ Inclusive competences, Coordinate learners and group of learners during Inclusive STEAM educational activities and projects, Coordinate team of educators and special education staff during a collaborative Inclusive STEAM teaching procedure, Raise Inclusive STEAM Education awareness in the educational community, Implement policies that promote STEAM Education and Inclusion, Develop and apply personal transferable skills, Develop and apply social transferable skills, Develop and apply learning to learn transferable skills, Develop and apply digital information and data literacy skills, Manage and use digital tools for communication and collaboration in Inclusive STEAM education, Select and use (self) evaluation practices and tools for Inclusive STEAM Education, Participate in lifelong learning related to STEAM, Inclusion and Inclusive STEAM Educational approach.
Essential knowledge	Inclusive and Special education principles, Inclusive and Special education differences, Developmental milestones in learning, Children’s physical development, Disability types, Signs and symptoms of disabilities, Screening tools for disabilities, STEAM educational approach, Content knowledge of general and special education curricula of STEAM-related disciplines, Constructivism theory of learning, Constructivism teaching and learning techniques,

Name	Inclusive STEAM primary school teacher
	Teamwork principles, Teamwork teaching and learning methods, Teaching and learning techniques for Inclusive Education, STEAM Education and Special Education, Assessment strategies for Inclusive Education, STEAM Education and Special Education, Instructional means of Inclusive Education, STEAM Education and Special Education, Legislation for Inclusive and Special Education.
Optional skills and competences	Apply spatial and physical organization methods in Inclusive STEAM Classrooms, Apply educational resources' management methods in Inclusive STEAM Education activities and projects, Apply time management and learning organization methods for Inclusive STEAM activities and projects, Participate and collaborate in local, national, and international educational communities, including schools and educators, Engage with industry professionals and businesses, Participate and collaborate in community organizations and institutions, Apply action research procedures for reflection and improvement of educational procedures in Inclusive STEAM Education.
Optional knowledge	Basic understanding of child psychology.
EQF level	5,6

Name	STEAM Special educational needs primary school teacher
Code	2343.2
Description	The Special educational needs STEAM teachers at Inclusive classrooms of primary schools provide specially designed STEAM instructions to students with special educational needs (SEN), on a primary school level. They focus on differentiated and individualized teaching approaches in order to assist and instruct SEN students in STEAM Education activities and projects in Inclusive classrooms, facilitating the development of their STEAM and Inclusive competences. STEAM special educational needs teachers assess the students' progress, taking into account their strengths and weaknesses and communicate their findings to parents, administrators and other parties involved. In addition, they collaborate with Inclusive STEAM primary teachers, helping them develop the learners' profiles and design and select the appropriate learning materials and lessons for all students.
Alternative level	Special educational needs STEAM primary school teacher, STEAM SEN teacher primary school
Hierarchy	2- Professionals, 23- Teaching professionals, 234- Primary school and early childhood teachers, 2343- Inclusive STEAM educators in primary school (new)
Essential skills and competences	Apply knowledge of Inclusive and Special Education, Apply knowledge of the STEAM Education approach, Identify and examine the impact of STEAM Education in Inclusive Educational Environments, Assess, analyze and monitor SEN learners' needs in Inclusive STEAM context, Develop SEN learners' profiles for Inclusive STEAM Education, Integrate SEN learners' prior knowledge and skills in Inclusive STEAM Educational procedure, Apply Inclusive STEAM teaching and learning techniques, Apply teamwork methods and group dynamic methods for collaborative learning educational activities and projects, Use appropriate resources and (Assistive Technology) tools according to SEN learners' needs in Inclusive STEAM activities and projects, Provide appropriate instructions according to SEN learners' needs and profiles in Inclusive STEAM activities and projects, Assess and analyze SEN learners' activity/ project performance, Assess and analyze group dynamics and interrelationships, Provide appropriate feedback to all stakeholders, Develop SEN learners' STEAM portfolios, Ensure accessibility and Inclusion in Inclusive STEAM Educational procedures, Ensure SEN learners' active engagement in Inclusive STEAM activities/ projects, Promote SEN learners' confidence and self-efficacy in Inclusive STEAM activities/ projects, Design and adapt Inclusive STEAM education curriculum of STEAM related general and special education disciplines, Design and adapt Inclusive STEAM education course/lessons, Design and adapt Inclusive STEAM education activities and projects, Identify and select appropriate resources and (Assistive Technology) tools for SEN learners, Design, create and adapt appropriate resources and instructions for Inclusive STEAM Education, Facilitate SEN learners' STEAM competences, Facilitate SEN learners' Inclusive competences, Coordinate SEN learners and group of learners during Inclusive STEAM educational activities and projects, Implement policies that promote STEAM Education and Inclusion, Develop and apply personal transferable skills, Develop and apply social transferable skills, Develop and apply learning to learn transferable skills, Develop and apply digital information and data literacy skills, Manage and use digital tools for communication and collaboration in Inclusive STEAM education, Select and use (self) evaluation practices and tools for Inclusive STEAM Education, Participate in lifelong learning related to STEAM, Inclusion and Inclusive STEAM Educational approach.
Essential knowledge	Inclusive and Special education principles, Inclusive and Special education differences, Developmental milestones in learning, Children's physical development, Disability types, Signs and symptoms of disabilities, Screening tools for disabilities, STEAM educational approach, STEAM Education approach, Constructivism theory of learning, Constructivism teaching and learning techniques, Teamwork principles, Teamwork teaching and learning methods, Teaching and learning techniques for Inclusive Education, STEAM Education and Special Education, Assessment strategies for Inclusive Education, STEAM Education and Special Education, Instructional means of Inclusive Education, STEAM Education and Special Education, Legislation for Inclusive and Special Education.
Optional skills and competences	Apply spatial and physical organization methods in Inclusive STEAM Classrooms, apply educational resources' management methods in Inclusive STEAM Education activities and projects, Apply time management and learning organization methods for Inclusive STEAM activities and projects, Participate and collaborate in local, national, and international educational communities, including schools and educators, Engage with industry professionals and businesses, Participate and collaborate in community organizations and institutions, Apply action research procedures for reflection and improvement of educational procedures in Inclusive STEAM Education.
Optional knowledge	Basic understanding of child psychology.
EQF level	5,6

Name	Inclusive STEAM learning support teacher
Code	2343.3
Description	The Inclusive STEAM learning support teachers assist mainly one or two students who have general learning difficulties, in order for them to be able to participate in Inclusive STEAM activities and projects. Inclusive STEAM learning support teachers focus on basic skills of STEAM related disciplines, such as numeracy and literacy and thus teach and assist students on basic subjects such as writing, reading, math and languages. They support students in their schoolwork in Inclusive STEAM activities and projects, plan learning strategies for the students' successful inclusion and participation in such activities, identify their learning needs and progress, and act accordingly. They collaborate closely with the STEAM Special educational needs primary school teacher in such direction, whereas they provide feedback to him/her and all the other stakeholders, interested in student(s)' progress.
Alternative level	STEAM learning support teacher SEN students
Hierarchy	2- Professionals, 23- Teaching professionals, 234- Primary school and early childhood teachers, 2343- Inclusive STEAM educators in primary school (new)
Essential skills and competences	Apply knowledge of Inclusive and Special Education, Apply knowledge of the STEAM Education approach, Assess, analyze and monitor the needs of the learner(s) they support in Inclusive STEAM context, Develop the learning profiles of the learner(s) they support, Integrate the prior knowledge and skills of the learner(s) they support in Inclusive STEAM Educational procedures, Apply Inclusive/ Special Education STEAM teaching and learning techniques, Use appropriate resources and (Assistive Technology) tools according to the needs of the learner(s) they support in Inclusive STEAM activities and projects, Provide appropriate instructions according to the needs and profiles of the learner(s) they support in Inclusive STEAM activities and projects, Assess and analyze the individual activity/ project performance of the learner(s) they support, Provide appropriate feedback to all stakeholders, Develop STEAM portfolios of learner(s) they support, Ensure accessibility and inclusion in Inclusive STEAM Educational procedure, Ensure the active engagement of the learner(s) they support in Inclusive STEAM activities/ projects, Promote the confidence and self-efficacy of the learner(s) they support

Name	Inclusive STEAM learning support teacher
	in Inclusive STEAM activities/ projects, Design and adapt Inclusive STEAM education course/lessons, Design and adapt Inclusive STEAM education activities and projects, Identify and select appropriate resources and (Assistive Technology) tools for Inclusive STEAM Education, Design, create and adapt appropriate resources and instructions for Inclusive STEAM Education, Facilitate the STEAM competences of the learner(s) they support, Facilitate the Inclusive competences of the learner(s) they support, Coordinate learner(s) they support during Inclusive STEAM educational activities and projects, Implement policies that promote STEAM Education and Inclusion, Raise Inclusive STEAM Education awareness in the educational community, Develop and apply personal transferable skills, Develop and apply social transferable skills, Develop and apply teamwork, collaboration and cooperation skills, Develop and apply learning to learn transferable skills, Develop and apply digital information and data literacy skills, Manage and use digital tools for communication and collaboration in Inclusive STEAM education, Select and use (self) evaluation practices and tools for Inclusive STEAM Education, Participate in lifelong learning related to STEAM, Inclusion and Inclusive STEAM educational approach.
Essential knowledge	Inclusive and Special education principles, Inclusive and Special education differences, Developmental milestones in learning, Children's physical development, Disability types, Signs and symptoms of disabilities, Screening tools for disabilities, STEAM educational approach, STEAM Education approach, Constructivism theory of learning, Constructivism teaching and learning techniques, Content knowledge of general and special education curricula of STEAM-related disciplines, Teamwork principles, Teamwork teaching and learning methods, Teaching and learning techniques for Inclusive Education, STEAM Education and Special Education, Assessment strategies for Inclusive Education, STEAM Education and Special Education, Instructional means of Inclusive Education, STEAM Education and Special Education, Legislation for Inclusive and Special Education.
Optional skills and competences	Apply teamwork methods and group dynamic methods for collaborative learning educational activities and projects, Assess and analyze group dynamics and interrelationships, Design and adapt Inclusive STEAM education curriculum of STEAM related general and special education disciplines, Apply spatial and physical organization methods in Inclusive STEAM classrooms, Apply educational resources' management methods in Inclusive STEAM Education activities and projects, Apply time management and learning organization methods for Inclusive STEAM activities and project, Engage with industry professionals and businesses, Apply action research procedures for reflection and improvement of educational procedures in Inclusive STEAM Education
Optional knowledge	Teamwork principles, Teamwork teaching and learning methods
EQF level	4,5

Name	Inclusive STEAM pedagogy expert
Code	2343.4
Description	The Inclusive STEAM pedagogy experts assist the leading educator in implementing the Inclusive STEAM Education procedure and the other two professionals in any need they have. They use and suggest a variety of practical and equitable Inclusive and STEAM teaching approaches in the classroom and help all educators in designing and adapting STEAM curriculum, activities, projects, resources and tools using Inclusive frameworks and techniques. They continuously enhance their knowledge and skills in Inclusive Education, STEAM Education and Inclusive STEAM Education, whereas they collaborate with community members for the better implementation of STEAM Education activities and projects, fostering their awareness on Inclusive Education, its necessity and its needs.
Alternative label	Inclusive STEAM mentor
Hierarchy	2- Professionals, 23- Teaching professionals, 234- Primary school and early childhood teachers, 2343- Inclusive STEAM educators in primary school (new)
Essential skills and competences	Apply knowledge of Inclusive and Special Education, Apply knowledge of the STEAM Education approach, Identify and examine the impact of STEAM Education in Inclusive Educational Environments, Assess, analyze and monitor learners' needs in Inclusive STEAM context, Develop learners' profiles for Inclusive STEAM Education, Integrate learners' prior knowledge and skills in Inclusive STEAM Educational procedure, Apply Inclusive STEAM teaching and learning techniques, Apply teamwork methods and group dynamic methods for collaborative learning educational activities and projects, Use appropriate resources and (Assistive Technology) tools according to learners' needs in Inclusive STEAM activities and projects, Provide appropriate instructions according to learners' needs and profiles in Inclusive STEAM activities and projects, Assess and analyze individual learners' activity/ project performance, Assess and analyze group dynamics and interrelationships, Provide appropriate feedback to all stakeholders, Develop learners' STEAM portfolios, Ensure accessibility and Inclusion in Inclusive STEAM Educational procedures, Ensure all learners' active engagement in Inclusive STEAM activities/ projects, Promote learners' confidence and self-efficacy in Inclusive STEAM activities/ projects, Design and adapt Inclusive STEAM education curriculum of STEAM related general and special education disciplines, Design and adapt training program frameworks for Inclusive STEAM Education, Design and adapt Inclusive STEAM education course/lessons, Design and adapt Inclusive STEAM education activities and projects, Identify, evaluate and select appropriate resources and (Assistive Technology) tools for Inclusive STEAM Education, Design, create and adapt appropriate resources and instructions for Inclusive STEAM Education, Facilitate all learners' STEAM competences, Facilitate all learners' Inclusive competences, Coordinate learners and group of learners during Inclusive STEAM educational activities and projects, Coordinate team of educators and special education staff during a collaborative Inclusive STEAM teaching procedure, Participate and collaborate in local, national, and international educational communities, including schools and educators, Implement policies that promote STEAM Education and Inclusion, Engage with industry professionals and businesses, Participate and collaborate in community organizations and institutions, Raise Inclusive STEAM Education awareness in the educational community, Develop and apply personal transferable skills, Develop and apply social transferable skills, Develop and apply learning to learn transferable skills, Develop and apply digital information and data literacy skills, Develop skills for successful mentoring, Manage and use digital tools for communication and collaboration in Inclusive STEAM education, Select and use (self) evaluation practices and tools for Inclusive STEAM Education, Participate in lifelong learning related to STEAM, inclusion and Inclusive STEAM educational approach, Apply action research procedures for reflection and improvement of educational procedures in Inclusive STEAM Education.
Essential knowledge	Inclusive and Special education principles, Inclusive and Special education differences, Developmental milestones in learning, Children's physical development, Disability types, Signs and symptoms of disabilities, Screening tools for disabilities, STEAM educational approach, Content knowledge of general and special education curricula of STEAM related disciplines, Constructivism theory of learning, Constructivism teaching and learning techniques, Teamwork principles, Teamwork teaching and learning methods, Teaching and learning techniques for Inclusive Education, STEAM Education and Special Education, Assessment strategies for Inclusive Education, STEAM Education and Special Education, Instructional means of Inclusive Education, STEAM Education and Special Education, Legislation of Inclusive and Special Education.
Optional skills and competences	Apply spatial and physical organization methods in Inclusive STEAM Classrooms, Apply educational resources' management methods in Inclusive STEAM Education activities and projects, Apply time management and learning organization methods for Inclusive STEAM activities and projects, Listening actively, Building trust, Encouraging, Instructing/ developing capabilities, Providing corrective feedback, Inspiring
Optional knowledge	Basic understanding of child psychology
EQF level	6,7