SpicE

Special EduCation STEAM Academy

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# WP4 Pilot Testing and Evaluation

# D4.2 Unified Evaluation Report

June 2025

Hellenic Open University

Authors: Natalia Spyropoulou and Sofia Tsitou

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# 1. Introduction

This deliverable presents the **evaluation report** of the SpicE training programme, a structured professional development pathway designed to enhance educators' competences in **Inclusive STEAM education**. Building on the pedagogical foundations and curriculum design principles outlined in previous deliverables, this report focuses on the **empirical assessment** of the training activities implemented across the three core phases:

1. A **Massive Open Online Course (MOOC)** that provided flexible, self-paced learning on key concepts and practices related to inclusive STEAM education.
2. A **Blended Learning Course** that combined online synchronous and asynchronous elements, enabling deeper engagement with content and reflective practice.
3. A set of two **Exchange Mobilities**, offering experiential learning through peer observation, school visits, and cross-border collaboration among educators.

The evaluation followed the unified evaluation framework (D4.1), integrating quantitative and qualitative data to assess the effectiveness, impact, and sustainability of the programme. It includes the assessment results from the MOOC, the blended learning course, and the international mobility phase, drawing on quantitative and qualitative data collected through surveys, reflections, and tutor feedback. In addition, the deliverable provides a country-level breakdown of participation and outcomes, offering insights into national trends and engagement. The final sections include an educational analysis across the three phases and a set of evidence-based recommendations tailored to different stakeholder groups, including policymakers, training providers, and educators. Overall, this report serves as both a documentation of impact and a roadmap for sustaining and scaling professional development in inclusive STEAM education.

# 2. Implementation of the SpicE training program

## 2.1 MOOC implementation

The SpicE MOOC was designed to support the professional development of pre- and in-service educators by building foundational knowledge, strategies, and competences

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in inclusive STEAM education, following the results of WP2 and WP3. The course adopts a self-regulated and community-based learning approach, encouraging peer interaction and reflection.

Structured over **five weeks**, the MOOC includes thematic modules covering:

- STEAM education principles
- Inclusive and Special Education approaches
- Practical applications of inclusive strategies in STEAM settings
- Assessment techniques
- EU policies supporting inclusion and STEAM

Each week includes 3-5 modules with self-running presentations and forum activities to promote peer exchange and collaborative learning.

The course is open to everyone who is interested in Inclusive STEAM education, focusing on educators with backgrounds in teaching or Educational Sciences and is especially tailored for primary education professionals. Assessment is conducted through multiple-choice quizzes, with digital badges awarded scores above 60%, and a certificate provided upon successful course completion.

The MOOC was delivered via the SPICE Virtual Learning Environment (VLE) from September 9, 2024, to January 19, 2025. The core training content was structured over four weeks and preceded an introductory week aimed at onboarding participants. This initial week included activities focused on community building, familiarisation with the VLE platform, and an introduction to the concept of Inclusive STEAM education. These preparatory activities were intended to support participant engagement and ensure a smooth start to the learning experience.

Initially, the MOOC was scheduled to conclude on October 27, 2024, allowing for the core five-week course duration, plus an additional two weeks for participants to complete any pending activities. However, in response to multiple requests from registered participants, the course remained open until January 19, 2025, to provide additional time for completion. Tutoring support was available throughout the main training period, while facilitation for technical and general inquiries continued until the extended closing date to ensure ongoing support for all learners. The basic statistics of the MOOC participants are given in the following Table 1.

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**Table 1: MOOC participation statistics**

| Participants | Number |
|---|---|
| **Pre-registrations for the MOOC participation** | 2330 |
| **Enrolled in the MOOC** | 2014 |
| **Started the MOOC** | 1423 |
| **Completed successfully the MOOC** | 826 |

The SpicE MOOC was designed with a modular badge system to recognise participant engagement and learning progress throughout the course. Each module (except the week 1 modules) included a dedicated assessment activity, in the form of a multiple-choice quiz, upon successful completion of which participants were automatically awarded a digital badge. These badges served both as a motivational tool and a way to provide micro-credentials aligned with specific learning outcomes. As illustrated in the table below, the number of badges awarded per module varied slightly depending on participant progression and assessment completion rates. In total, **12104 badges** were awarded for the **15 modules**. Participants who successfully completed at least 65% of the course requirements were awarded a Certificate of Completion. A total of **826 participants** received this certificate.

**Table 2: Awarded badges**

| Module Title | Badges Awarded |
|---|---|
| **2.1: The STE(A)M Educational Approach** | 921 |
| **2.2: Developing Students' STEAM Competences** | 889 |
| **2.3: Assessment in STEAM Activities/Projects** | 860 |
| **2.4: Participate and Collaborate in STEAM Education Communities** | 859 |

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| | |
|---|---|
| **3.1: Inclusive and Special Education Approaches** | 821 |
| **3.2: Practical Solutions and Strategies for Inclusive and Special Education** | 710 |
| **3.3: Facilitate Inclusive Competences** | 791 |
| **3.4: Assessment for Inclusive Education** | 791 |
| **3.5: Participate and Collaborate in Communities Related to Inclusive and Special Education** | 788 |
| **4.1: Introducing Inclusive Strategies in STEAM Activities/Projects** | 780 |
| **4.2: The Influence of STEAM Education in Inclusive and Special Education** | 774 |
| **4.3: Participate and Collaborate in Communities Related to Inclusive STEAM Education (Part 1)** | 783 |
| **5.1: Educational Practices for Identifying and Monitoring Students' Needs (Parts A & B)** | 770 |
| **5.2: EU Educational Policies** | 771 |
| **5.3: Participate and Collaborate in Communities Related to Inclusive STEAM Education (Part 2)** | 796 |
| **Sum of awarded budgets** | **12104** |

During the MOOC implementation, a total of **530 participants**, including 8 assigned tutors, actively contributed to at least one forum discussion either by posting a new topic or replying to existing threads. This represents a participation rate of over 60% from the final cohort of 826 registered learners, demonstrating strong engagement with the course's collaborative and peer-learning components.

Overall, participants initiated **502 discussion threads** and submitted **3,869 replies**, showing a vibrant exchange of ideas and experiences. The forums also attracted significant passive engagement, with **86,209 views**, indicating that many learners regularly followed discussions even if they did not post themselves. Additionally, 13 files were shared within forum posts, indicating that some participants contributed educational resources or examples to support their peers.

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**Table 3: Forum Activity Overview**

| Forum Activity Indicator | Total Count |
|---|---|
| **Number of discussion threads posted** | 502 |
| **Number of replies posted** | 3869 |
| **Number of attachments** | 13 |
| **Number of views** | 86209 |

## 2.2 Blended learning implementation

The SpicE blended learning training on Inclusive STEAM Education was designed as a follow-up opportunity for participants who had successfully completed the MOOC and expressed interest in further developing their competences. The course was organised into two parallel learning pathways, one for pre-service educators and one for in-service educators, each tailored to their respective professional needs and teaching contexts, while maintaining points of connection across the two groups.

MOOC participants were informed that they could apply for the blended course upon successful completion of the MOOC by October 27. This deadline was later extended to accommodate additional interested participants. The final participation figures are presented in the table below.

**Table 4: Participation in the blended learning courses**

| Forum Activity Indicator | Count | Total count |
|---|---|---|
| **Number of participants who expressed interest in joining the blended course** | | 438 |
| **In-service teachers who enrolled in the blended course** | 272 | 334 |
| **Pre-service teachers who enrolled in the blended course** | 62 | |
| **In-service teachers who actively started and participated in the course** | 184 | 205 |

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| | | |
|---|---|---|
| **Pre-service teachers who actively started and participated in the course** | 21 | |
| **In-service teachers who completed the blended course** | 99 | 109 |
| **Pre-service teachers who completed the blended course** | 10 | |

The blended training ran from November 4 to November 11 for in-service educators and from November 4 to December 4 for pre-service educators. The course content, as outlined in the WP3 deliverables, combined asynchronous materials and activities with 1-2 weekly synchronous sessions, offering a structured yet flexible learning experience.

## 2.3 Exchange mobility implementation

The third and final phase of the SpicE training pathway consisted of international exchange mobilities, during which 48 selected participants engaged in two-week, hands-on, practice-based learning experiences. These mobilities offered a valuable opportunity to apply the knowledge and competences developed during the MOOC and blended learning phases in authentic, collaborative environments. Two mobility programmes were implemented, hosted in Alicante (Spain) and Nicosia (Cyprus), each combining structured training sessions, group activities, and intercultural exchange.

A total of 48 participants, 12 from each participating country (Greece, Cyprus, Spain, and Bulgaria), were selected based on successful completion of the previous two phases and following national procedures related to mobility funding and travel regulations.

The mobility in Alicante (January 2025) was hosted by the University of Alicante and included six days of training. The first three days were delivered by the hosting institution, while partners from the University of Macedonia conducted the training during the remaining three days.

The Nicosia mobility (April 2025) was hosted by the University of Cyprus, which facilitated the first three training days. The trainers who delivered the training over the

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next three days were from Trakia University. Each mobility thus consisted of six full training days, combining contributions from both hosting and visiting partners.

## 3. SpicE training evaluation

The objective of the evaluation was to capture participants' expectations, experiences, and perceptions related to the quality, relevance, and potential impact of the training. The evaluation was designed to support both formative and summative reflection on the implementation of the programme, as well as to provide guidance for future iterations or similar initiatives.

The evaluation was conducted through surveys, one at the beginning and one at the end of each course phase (MOOC, blended learning and mobilities) and two focus groups. These instruments were developed to gather both quantitative and qualitative data, using a combination of closed-ended Likert scale questions, open-ended prompts and discussions. The analysis aimed to explore multiple dimensions of the learner experience, with particular attention to inclusivity, professional relevance, and the alignment between expectations and outcomes.

The evaluation focused on four main dimensions:

- **Demographics:** The evaluation began by collecting demographic information to better understand the background of participants. This included gender, age, country of residence, educational attainment, and professional status (e.g., pre-service or in-service educators). This contextual information helped frame the diversity and representativeness of the training cohort.
- **Prior Knowledge and Experience:** Participants were asked to self-report their prior experience and qualifications related to inclusive and STEAM education. This included certified knowledge, teaching experience in general and special education, and familiarity with core topics such as inclusive curriculum design, assessment strategies, digital tools, and coordination of inclusive STEAM learning environments. This dimension aimed to establish a baseline for assessing change and identifying participant needs.
- **Expectations and Perceived Outcomes:** The surveys explored participants' motivations for enrolling in the course and what they hoped to gain, ranging

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from skills and knowledge acquisition to networking, professional development, and certification. These expectations were revisited in the post-course survey to assess the perceived value and impact of the training experience, particularly in relation to their educational practice and career aspirations.

- **Course Quality, Satisfaction, and Community Engagement:** Finally, participants were invited to evaluate the quality of the training experience, including content relevance, structure, tutor support, and assessment methods. Additional questions focused on learner satisfaction and the role of community-building elements, such as forum discussions and peer collaboration, in enhancing engagement and learning.

## 3.1 MOOC assessment

The evaluation process of the MOOC, in which trainees participated, was based on a two-step procedure involving responses to carefully structured questionnaires:

- A questionnaire was given to the trainees to complete at the beginning of the MOOC (1,421 respondents).
- A questionnaire was given to the trainees who successfully finished the MOOC to reply (826 respondents).

### 3.1.1. Demographics

The demographic profile of respondents to the pre-MOOC survey is illustrated in Figure 1. A total of 1,421 answers were collected across all five questions. Several interesting observations can be easily made:

- Over 80% of the respondents identified as female.
- Approximately 60% of the respondents was in the 35 to 54 age range.
- Greece, Turkey and Spain were the countries of residence of the vast majority of the responders, in line with the MOOC participants.
- Almost 60% of the respondents held an academic qualification above a Bachelor's degree (BSc).
- A significant portion of the participants (around 79%) were in-service teachers with prior teaching experience.

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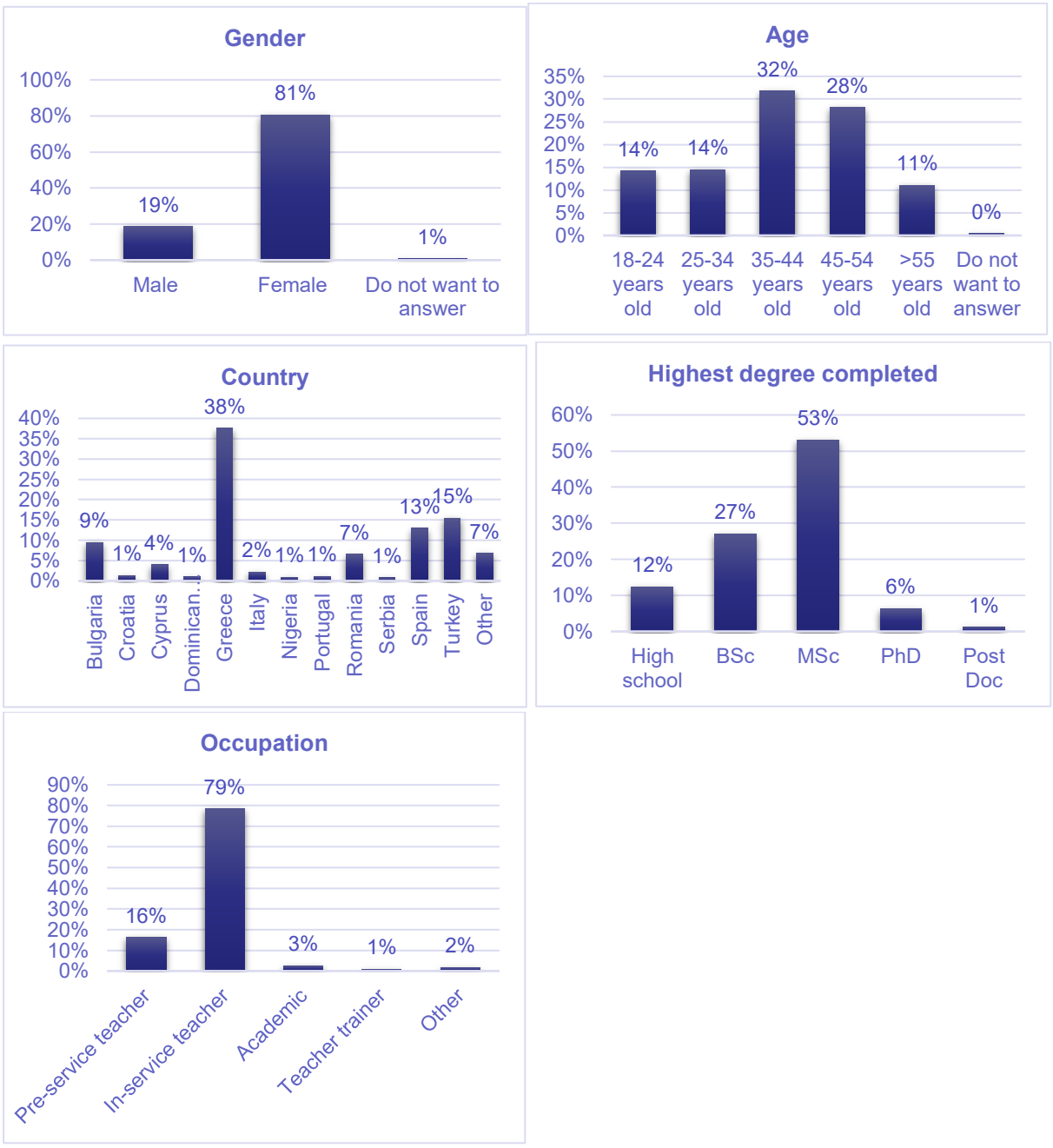


**Figure 1. Demographics of pre-MOOC survey**

The survey results regarding their prior knowledge on STEAM and teaching experience are shown in Figure 2. Most participants are experienced teachers, with around 60% having more than 10 years of teaching experience. In terms of formal education, almost half of the participants had some form of certified knowledge in Special/Inclusive Education, mainly through university courses or seminars. However, certified knowledge in STEAM Education was less common, with 41% reporting no formal

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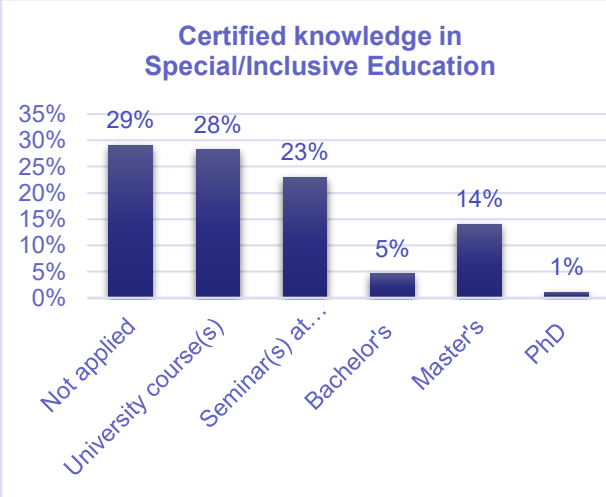
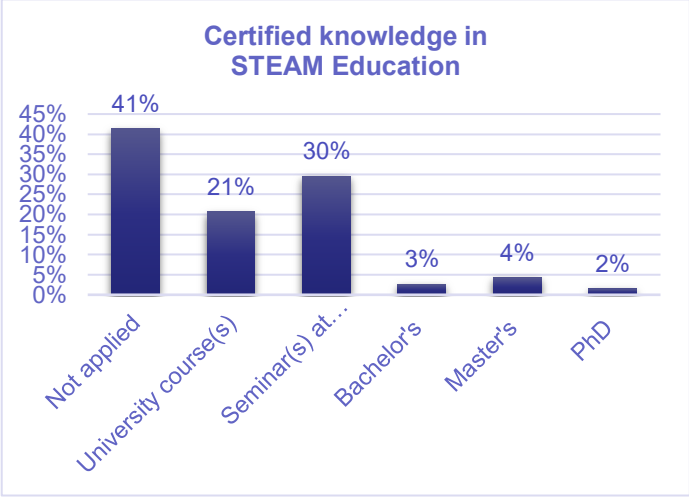
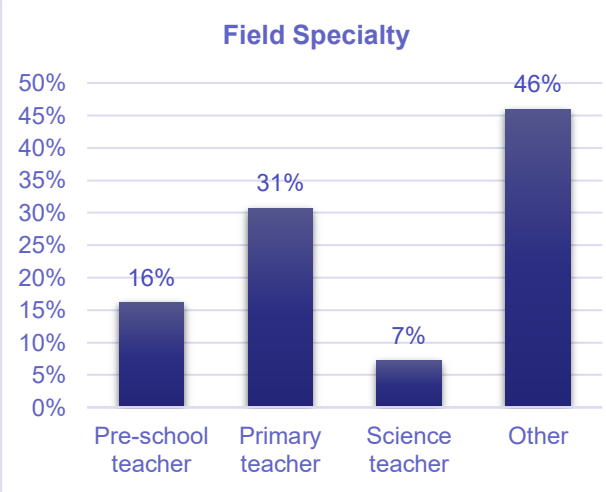
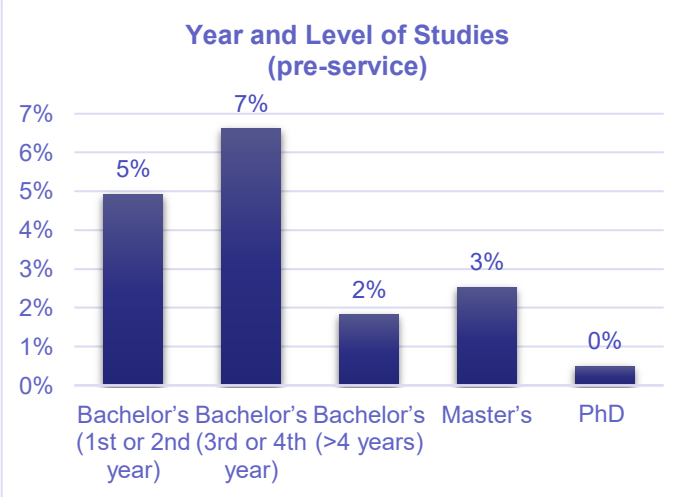
training at all. Only a small number of participants had strong experience implementing STEAM projects- only 6% considered themselves experts, and most had little to moderate experience. When asked about their familiarity with inclusive STEAM aspects, most respondents felt they had limited knowledge. In addition, the majority of respondents agreed that STEAM education is beneficial for all students and that combining STEAM with inclusive education can enhance learning outcomes.

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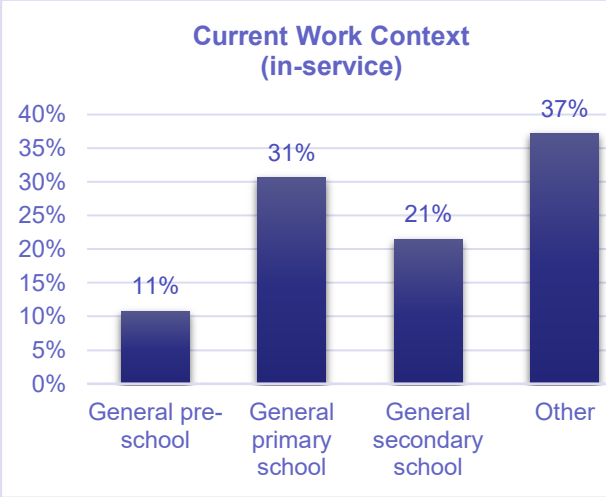


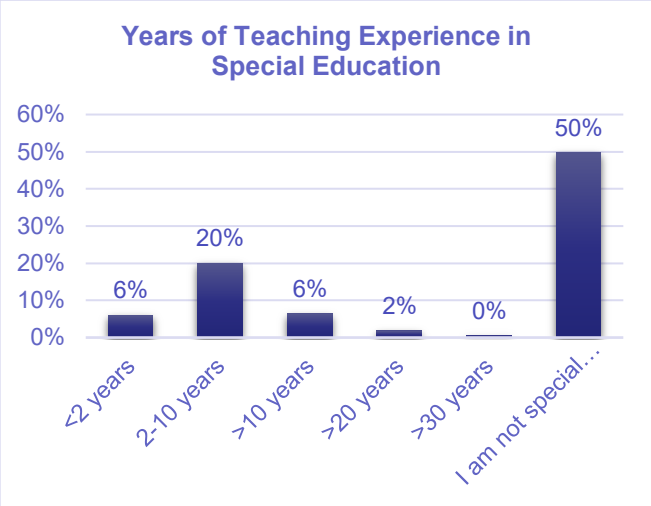


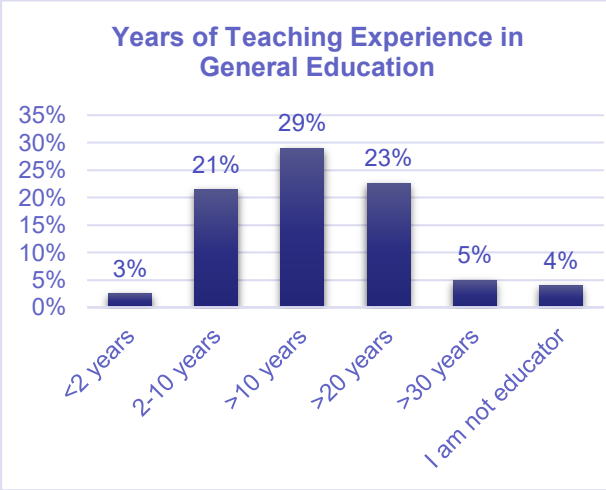


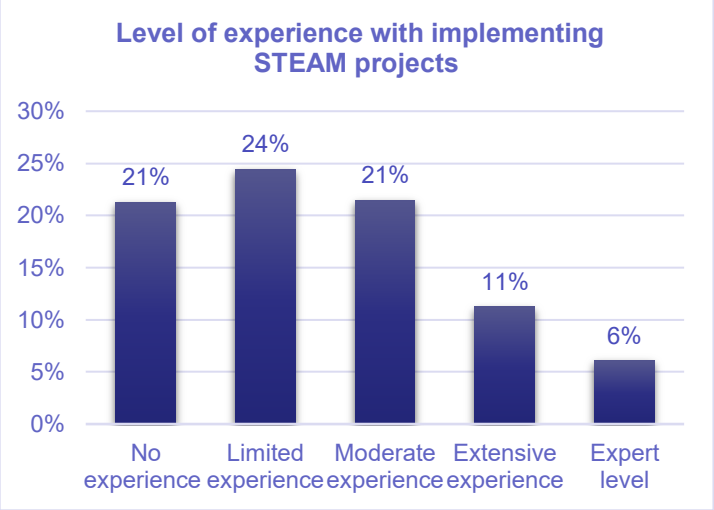


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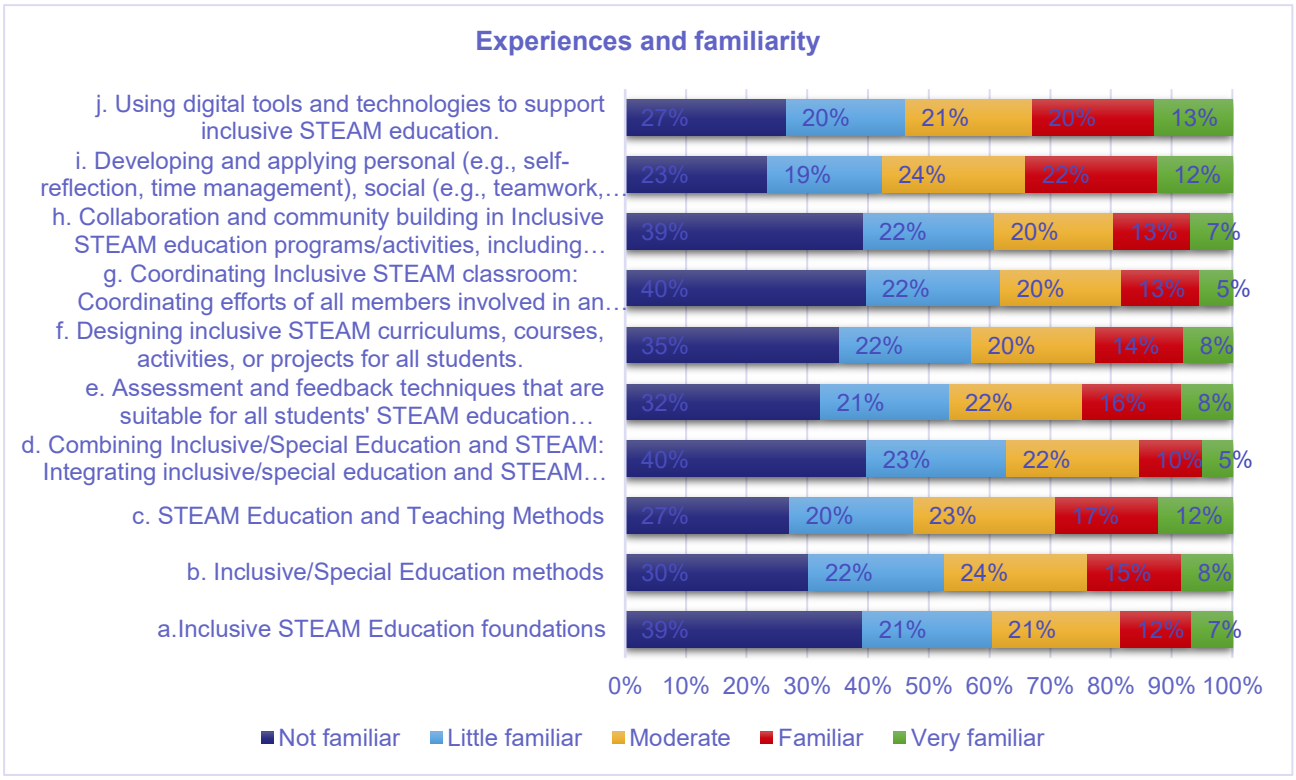


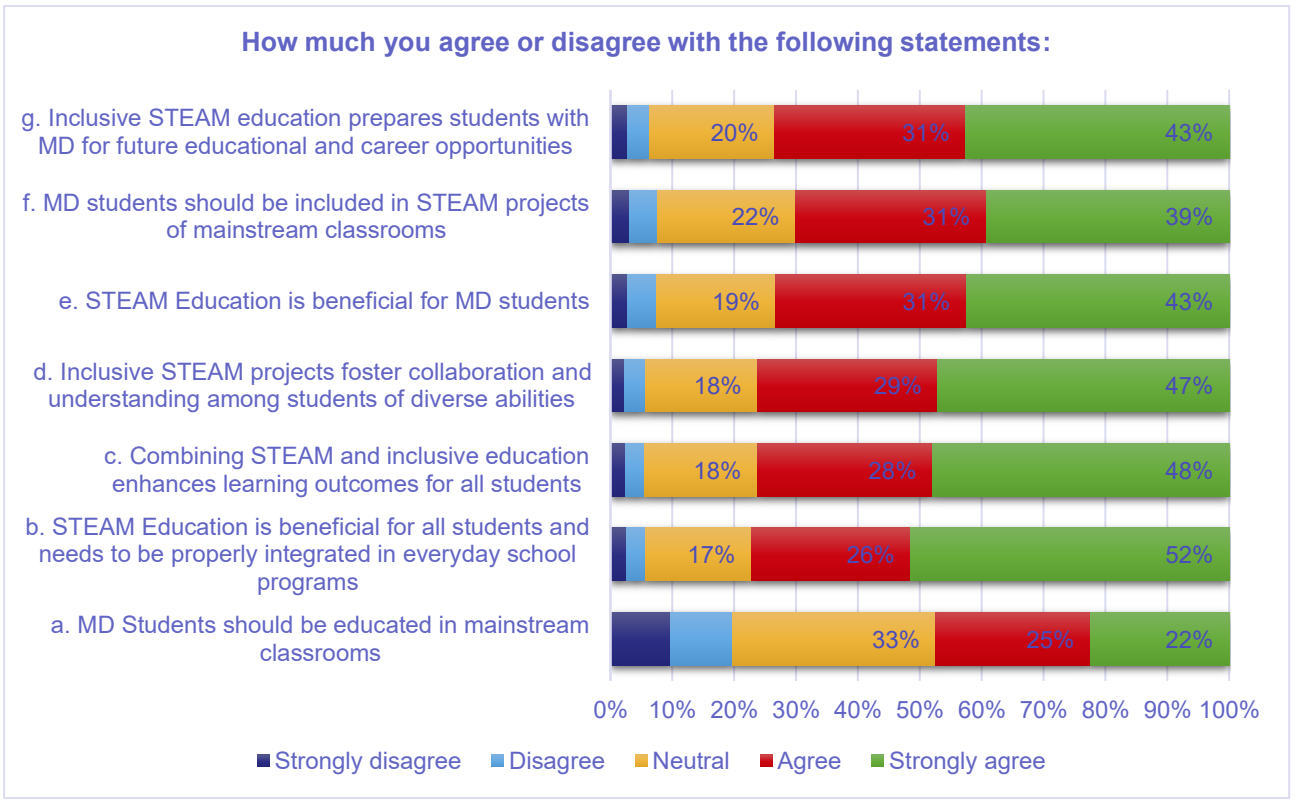


**Figure 2. Prior knowledge/experience of respondents to pre-MOOC survey**

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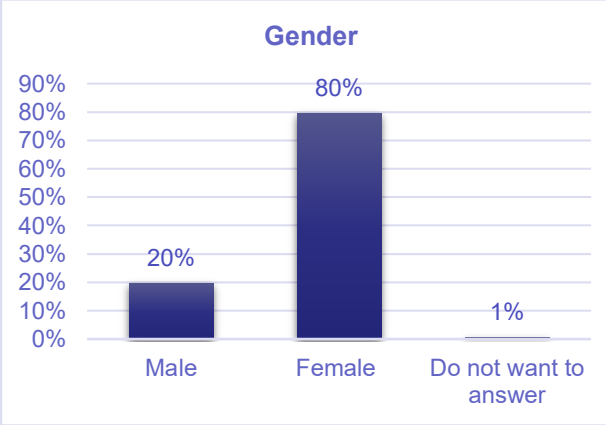
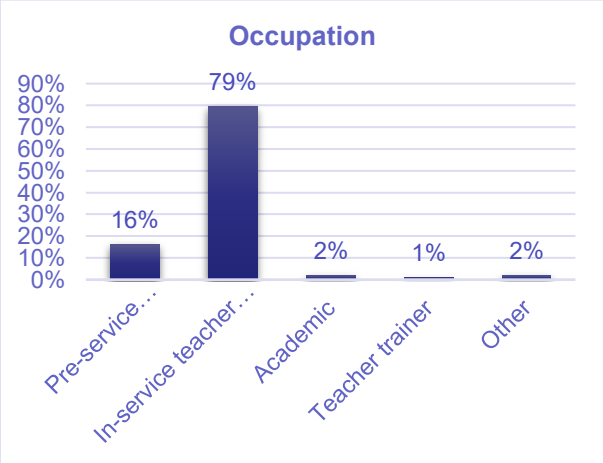
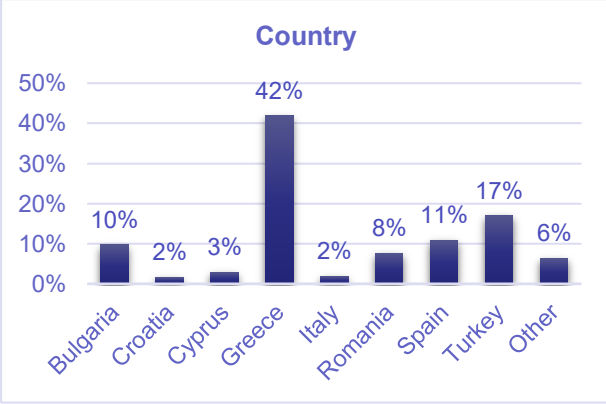
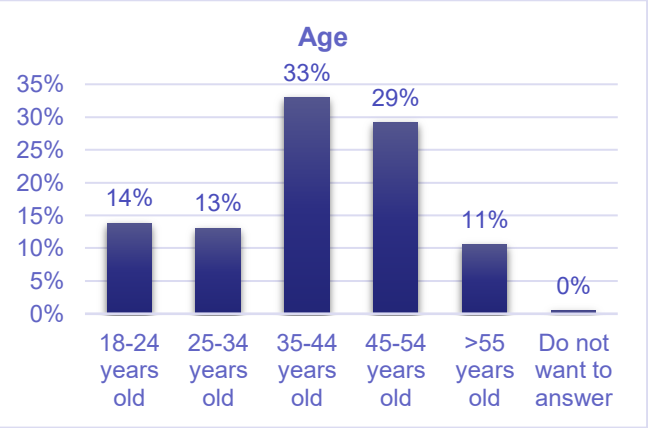
Figure 3 displays the demographic characteristics of those who completed the MOOC course. In total, 826 responses were recorded across the five demographic questions. The data reveals several noteworthy trends:

- The gender distribution remains largely skewed towards women, with 80% self-identifying as female.
- The 35 to 54 age range continues to dominate, representing 62% of respondents.
- The majority of participants came from Greece (42%), followed by Turkey (17%) and Spain (11%), consistent with the pre-MOOC demographic data.
- A significant majority (around 58%) held postgraduate degrees. Only 13% had a high school diploma and 28% held a BSc degree.
- The largest group was again in-service teachers, comprising 79% of respondents, with active teachers representing 16%.

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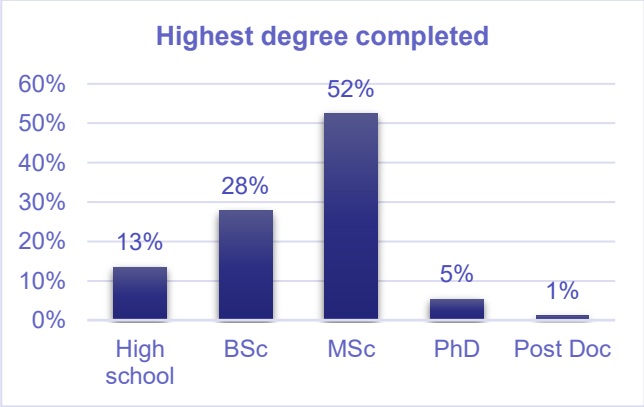
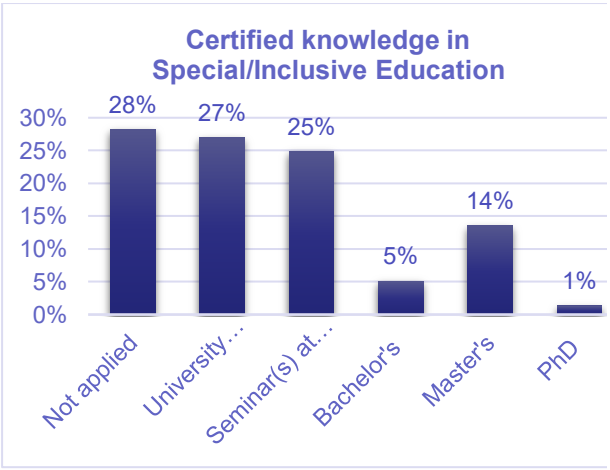
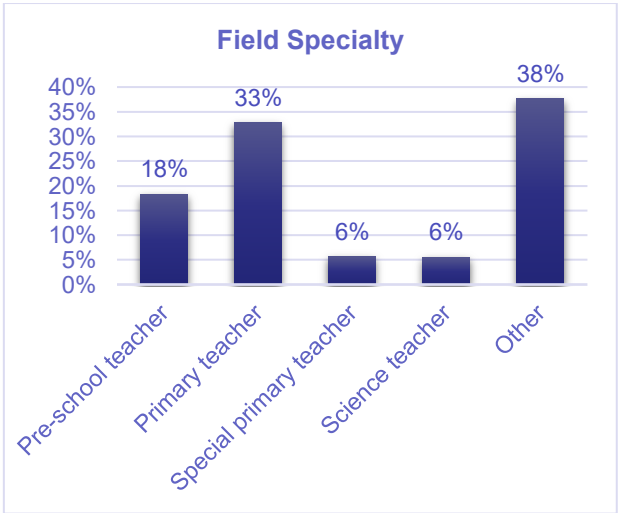



**Figure 3. Demographics of post-MOOC survey**

The post-MOOC survey results show that most participants are experienced educators, with approximately 61% having over 10 years of teaching experience, which closely aligns with the pre-MOOC data. While general teaching experience is strong, only 34% of respondents reported having some background in special education, and most of them had relatively limited experience. In terms of formal education, certified knowledge in Inclusive Education was fairly common, with only 28% reporting no formal training—an improvement compared to pre-MOOC levels. In contrast, formal training in STEAM Education remains limited, with 41% of participants reporting no certified knowledge, mirroring the pre-MOOC findings.

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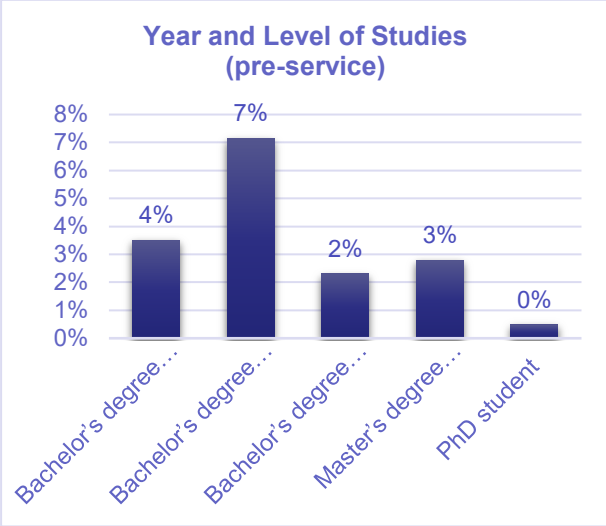


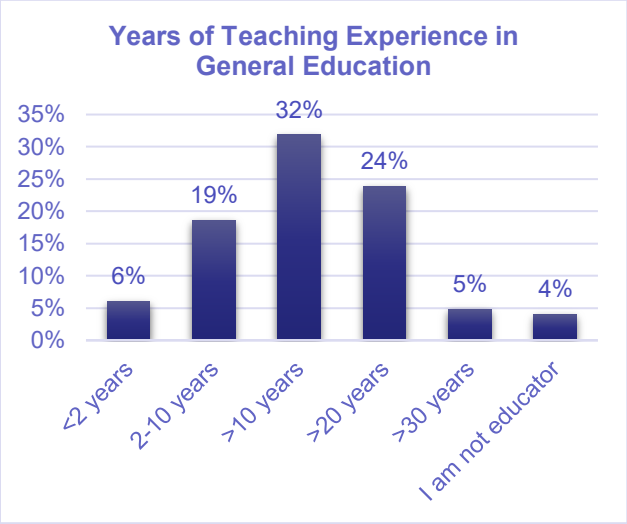


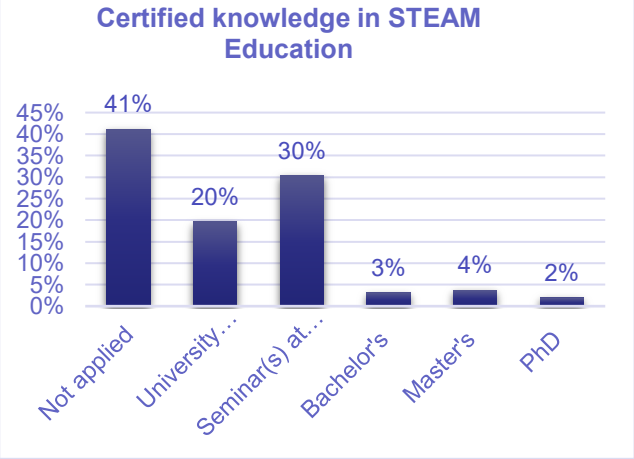


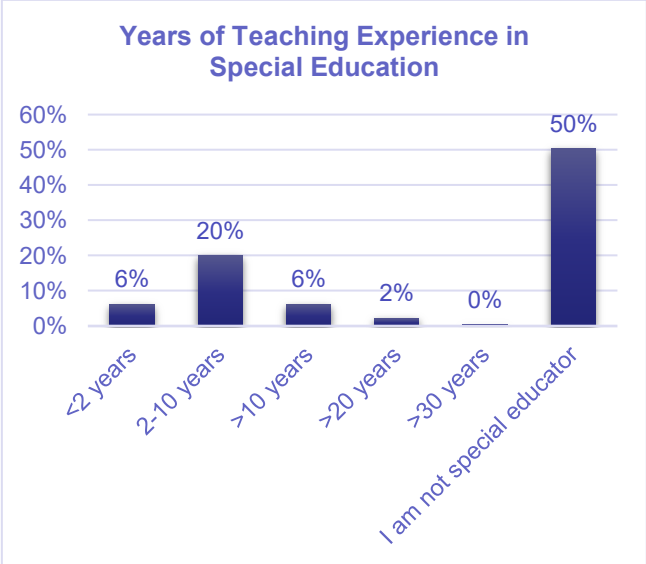


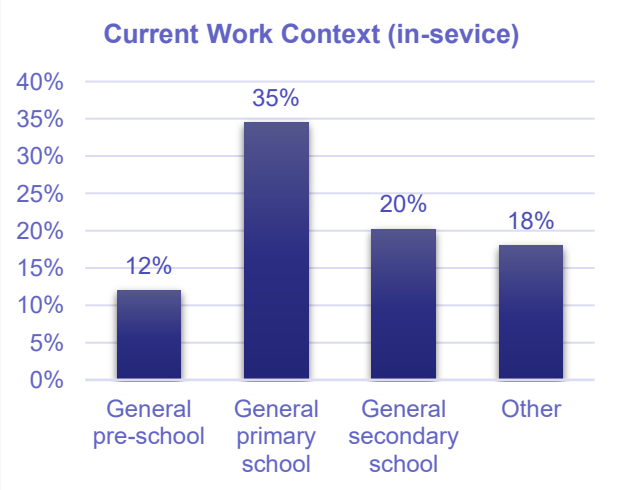


**Figure 4. Knowledge/experience of respondents to post-MOOC survey**

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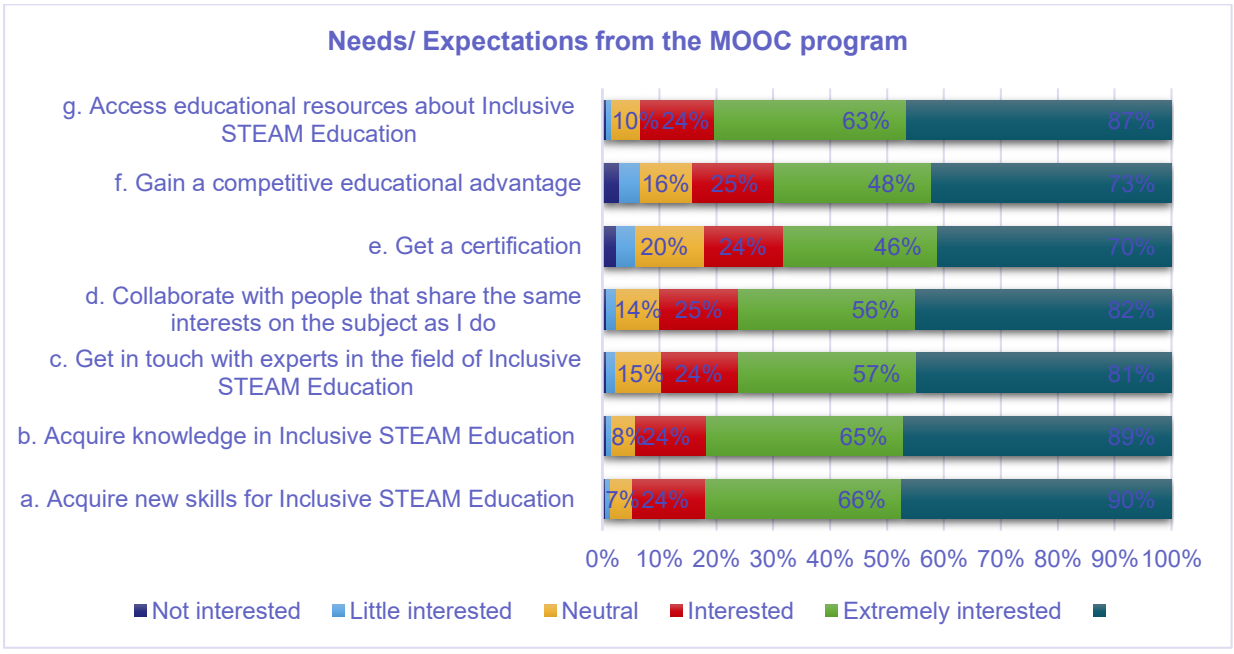
### 3.1.2. The pre-MOOC assessment results

Regarding the respondents' expectations from the MOOC, the following are the most important observations drawn from Figure 5:

- The majority of respondents (around 80–90%) were primarily interested in gaining new knowledge and skills, as well as accessing useful resources. While they valued the opportunity to connect and collaborate with peers and experts, certification and gaining a competitive educational advantage were not among their main goals.
- Their top priorities were to apply what they learn, enhance their current job, and bring positive changes to their professional environment. In contrast, finding a new job was not a significant expectation.

These findings suggest that participants viewed the MOOC mainly as a tool for professional development, a way to strengthen their teaching and improve their work.

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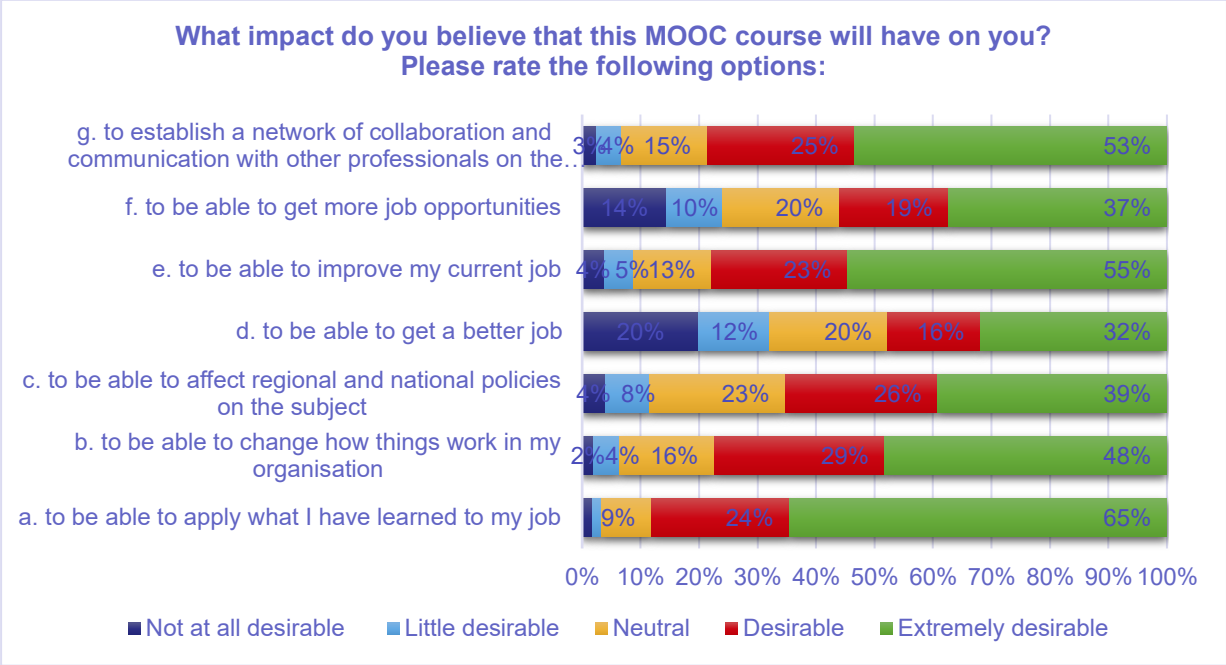


**Figure 5. Expectations from the MOOC according to the pre-MOOC survey**

Participants' additional expectations extended beyond the standard goals typically associated with online courses. Their responses reflected a deep engagement with the topic and a desire for both practical application and transformative impact. The following themes emerged:

- **Practical Tools, Strategies, and Classroom Implementation:** Many participants expressed a strong desire for applicable content they could immediately use in their teaching practice. They sought real-life examples, case studies, lesson plans, project-based tasks, and assessment techniques that are inclusive and adaptable for students with diverse needs. As one participant noted: "*I expect the course to provide practical tools and resources that I can apply in my teaching… especially for students with learning difficulties*." Several teachers highlighted the need for support in designing interdisciplinary projects, integrating STEAM into specific subjects like music or statistics, and managing diverse classrooms through differentiated instruction.
- **Professional Growth and Career Advancement:** Another recurring expectation was related to career development. Participants viewed the MOOC as a pathway to improving their current roles, accessing new professional opportunities, or preparing for participation in Erasmus+ projects. Some also

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mentioned ambitions to lead initiatives, mentor colleagues, or create similar training programs in their regions.

- **Networking, Collaboration, and Community Building:** The course was widely seen as a gateway to professional networking and peer collaboration. Respondents hoped to join active communities, exchange experiences, and co-develop projects with educators from different cultural and national backgrounds. "*I want to join a community and take on a leadership role… my goal is to collaborate on joint projects and curricula*," one educator shared.
- **Support for Inclusive and Equitable Education:** Many participants had high expectations for learning how to better support students with disabilities or learning difficulties, with the goal of promoting equity in education. This included understanding how to design and implement inclusive activities, adapt mainstream curriculum, and collaborate with special education professionals. There was also interest in learning how to integrate inclusive practices from preschool to higher education.
- **Exposure to New Trends and Educational Innovation:** Several educators expected to stay up to date with current educational trends, including STEAM methodologies, AI integration, and the use of digital tools. Several participants hoped that the MOOC would expose them to innovative practices and help them rethink traditional educational models.
- **Inspiration, Personal Motivation, and Lifelong Learning:** Lastly, a group of participants expressed expectations related to personal development, such as finding inspiration, reigniting their motivation, or engaging in lifelong learning.

### 3.1.3. The post-MOOC assessment results

The following Figure 6 presents the participants' perspectives on the benefits they gained from taking part in the MOOC (N=826). Notably, the most favourable responses-ranging from approximately 85% to 90%, were associated with access to resources, acquisition of new knowledge and skills, and obtain a certification. This is in accordance with their original expectations. Additionally, interactions with experts and opportunities for peer collaboration were also received positive opinions (77% and 73% respectively). Around 78% also reported that the MOOC provided them with a competitive educational advantage.

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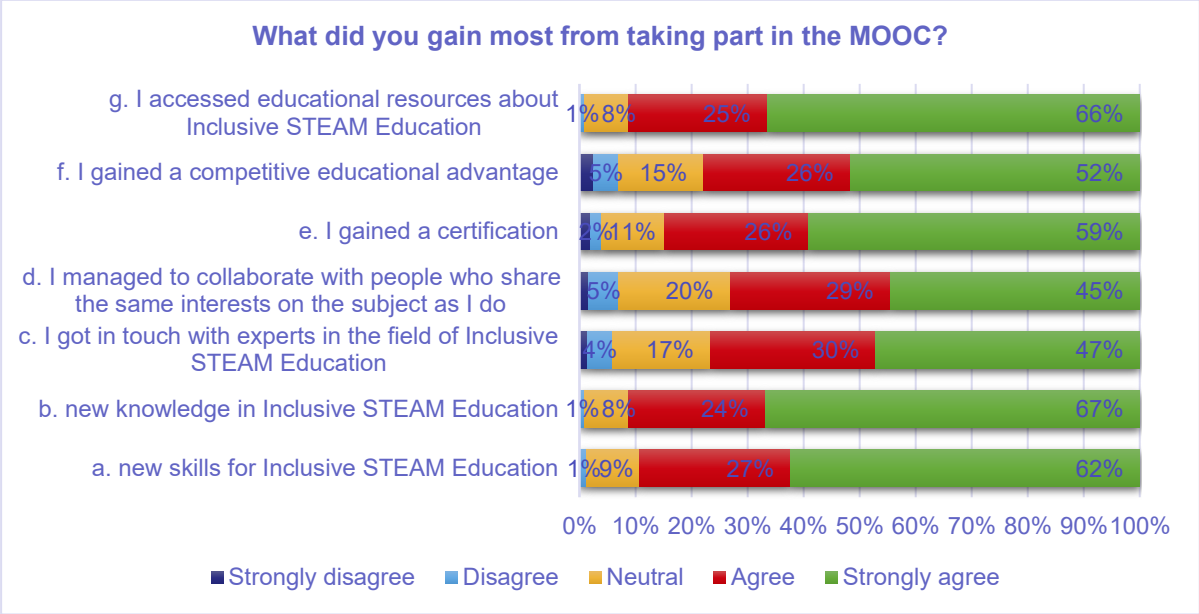


**Figure 6. Benefits of the MOOC according to the post-MOOC survey**

Based on the open-ended responses from the post-survey question regarding additional benefits of participating in the Inclusive STEAM MOOC the open-ended responses revealed a wide range of additional benefits that participants gained from the Inclusive STEAM MOOC, highlighting its multifaceted impact on both professional and personal development.

A central theme was professional **growth and skill development**. Many participants reported gaining new knowledge and techniques related to inclusive education, special education, and STEAM practices. For instance, one participant shared, *"I needed to learn a lot about differentiation, and I actually gained more than I expected… I appreciated the collaborative discussions with other participants, which broadened my understanding of inclusive practices."* Others noted learning about Universal Design for Learning (UDL), educational strategies for students with special needs, and assessment methods in inclusive classrooms. Several emphasized how the course changed their daily teaching perspective, with one stating, *"I began to look at my work as a teacher in a different way – more deeply in the psychological aspect and more broadly."*

Another strong theme was **collaborative learning and peer exchange**. Many appreciated the chance to interact with educators from around the world, stating things like *"It was a wonderful experience to exchange practices with colleagues from all over*

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*the world"* and *"I connected with a global community of educators, exchanging ideas and best practices."* This interaction fostered a sense of inclusion and professional solidarity, especially among participants who had previously felt isolated in their local teaching environments.

The theme of **access to resources and tools** also emerged strongly. Participants described discovering *"a lot of new resources, knowledge, and insight into this topic"* and felt empowered by the practical tools and materials they could implement in their classrooms. One participant commented, *"Thanks to this MOOC and additional material provided, I have learned some new teaching strategies that will, hopefully, improve my teaching and make learning more engaging for all my pupils."*

Additionally, **personal development and reflective practice** were frequently mentioned. Respondents described gaining time management skills, self-confidence, and a deeper awareness of their teaching values. One teacher reflected, *"This MOOC has enhanced my collaborative skills, helped me improve my digital literacy, and encouraged me to rethink how I create an inclusive environment."* Others highlighted how the flexibility of the MOOC allowed them to balance learning with family and professional responsibilities, making it a sustainable model for continuous professional development.

Finally, the **international and inclusive character** of the course was noted as an added value. Participants described feeling part of a shared mission, learning about cultural differences, and appreciating the global scope of inclusive education challenges. One respondent wrote, *"I realized that colleagues from any country have the same concerns about inclusive education as I do. I feel that I am not alone in my daily effort and this gives me energy to continue!"*

Overall, these insights demonstrate that beyond the acquisition of knowledge, the MOOC contributed significantly to participants' transformation as reflective, empowered, and globally connected educators.

Regarding the impact of the MOOC to the participations, Figure 7 illustrates that a significant majority of trainees (84%) felt assured in their ability to apply the knowledge gained to their jobs and enhance their current positions. Between 60% and 70% expected to be able to change how things work in their organizations, gain more job opportunities, secure better positions, and influence regional and national policies on

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the subject. Only a small proportion, 11% reported being unable to apply these aspects in practice.

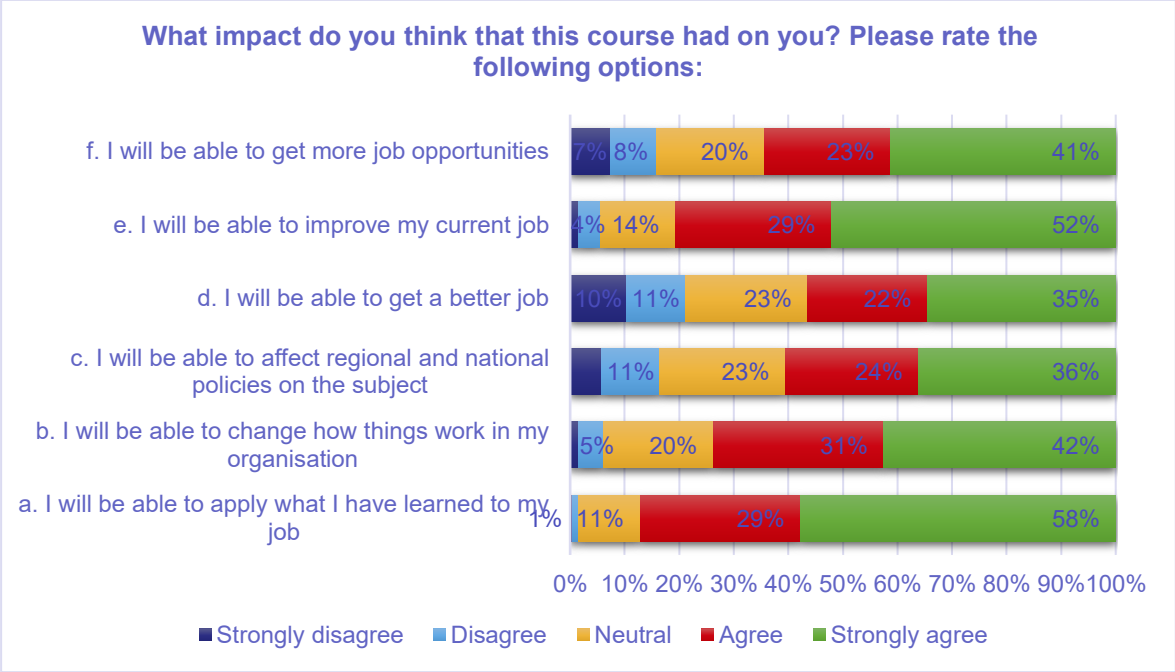


**Figure 7. Impact of the MOOC according to the post-MOOC survey**

Trainees were also invited to share any additional impact they experienced from participating in the MOOC. Many highlighted the course's flexibility, accessibility, and high-quality content, describing it as a unique opportunity for personalized learning, free access to rich educational resources, and exposure to a cutting-edge curriculum. Several participants referred to the democratization of learning, as it offered greater access to professional development, especially in educational systems where such opportunities are limited, e.g. "In the Portuguese educational system, there is no differentiation between teachers. Taking the MOOC contributed to my professional development and provided resources I can use in class."

A common theme was a shift in mindset and teaching philosophy. One educator noted, "This course changed the way I apply my teaching and made it more flexible," while another emphasized, "I began to look at my work as a teacher in a different way, more deeply in the psychological aspect and more broadly." Others pointed to enhanced inclusion practices, stating that the MOOC helped them develop differentiated instruction, inclusive classroom strategies, and better assessment methods tailored to

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diverse learners, including students with disabilities. A participant shared, “It helped me improve more inclusive methods in learning and teaching; I feel more equipped.”

The course also empowered educators in leadership and curriculum design. One principal shared plans to redesign classroom layouts and co-develop inclusive STEAM strategies across their school network, while another wrote, “I now feel more confident to support my colleagues and lead school-based training.” Beyond the classroom, the course nurtured reflective practice, boosted self-confidence, and promoted a growth mindset. As one respondent put it, “This MOOC reignited my passion for learning and made me feel more connected to a global community of educators.”

Other participants described gaining critical thinking and communication skills, “It sharpened my ability to express my thoughts clearly and reflect critically,” as well as a renewed sense of empathy and advocacy: “It helped me become more sensitive and inspired me to promote equity through STEAM.” For some, the MOOC even had personal relevance, such as a parent who shared, “I can apply what I’ve learned to better support my daughter’s education.”

Figures 8 display the trainees’ responses regarding their familiarity with various aspects of inclusive STEAM education. The results show a significant improvement in participants’ familiarity with key concepts related to Inclusive STEAM Education compared to the pre-MOOC survey. A paired t-test showed significant improvement across all ten items ($p < .001$), with score increases from 1.42 to 1.92. All changes had large effect sizes (Cohen’s $d > 0.80$), indicating a strong positive impact on perceived familiarity. Before the course, most participants rated their familiarity as low, with the majority falling into the "Not familiar" or "Little familiar" categories across almost all areas. After the MOOC, the percentage of respondents who reported being "Familiar" or "Very familiar" reached 75% in most categories related to Inclusive STEAM Education. Knowledge of integrating inclusive/special education methods with STEAM, and the use of digital tools in inclusive STEAM classrooms increased by 50%.

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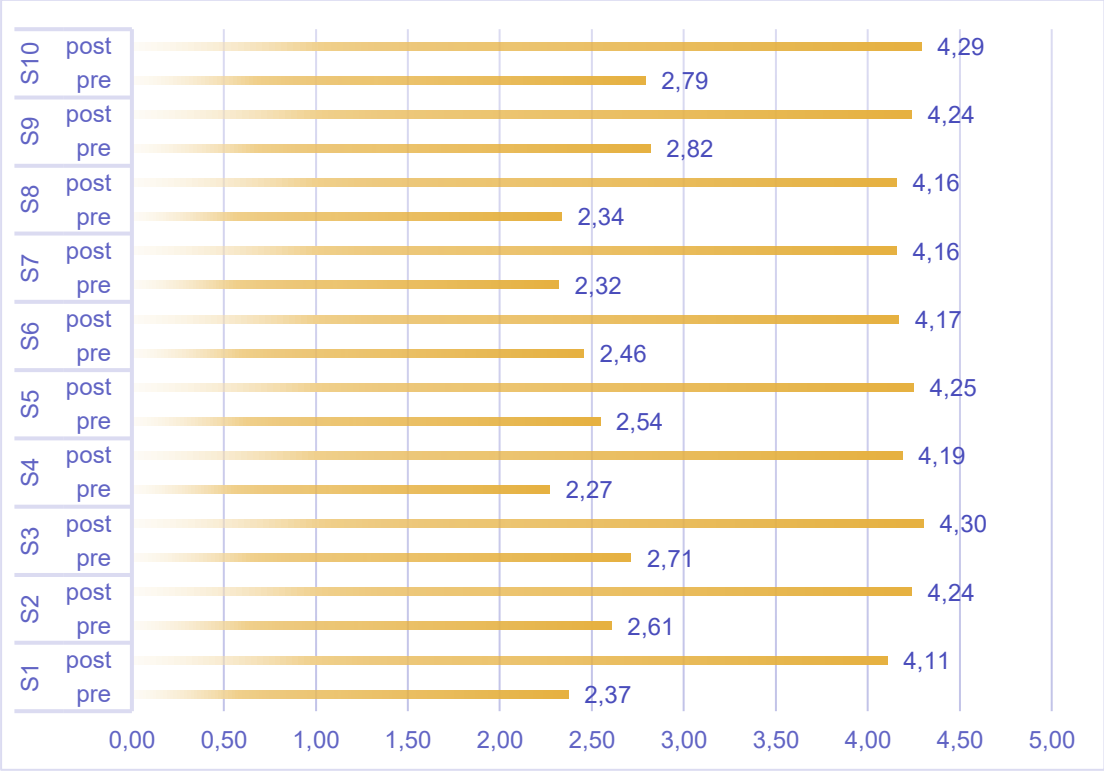


**Figure 8. Pre and post mean values for the familiarity of Inclusive STEAM dimensions.**

The assessment of the quality of the MOOC and the learning experience reveals strong positive perceptions among participants (Figure 9). The vast majority expressed satisfaction with the overall quality of the course, with 93% agreeing or strongly agreeing that the MOOC was well designed. Similarly, 89% positively rated the learning process and 86% found the course useful for their professional development. Continuance intention and overall satisfaction were also high, with over 90% of participants indicating agreement or strong agreement, and community building and engagement received 80% positive responses.

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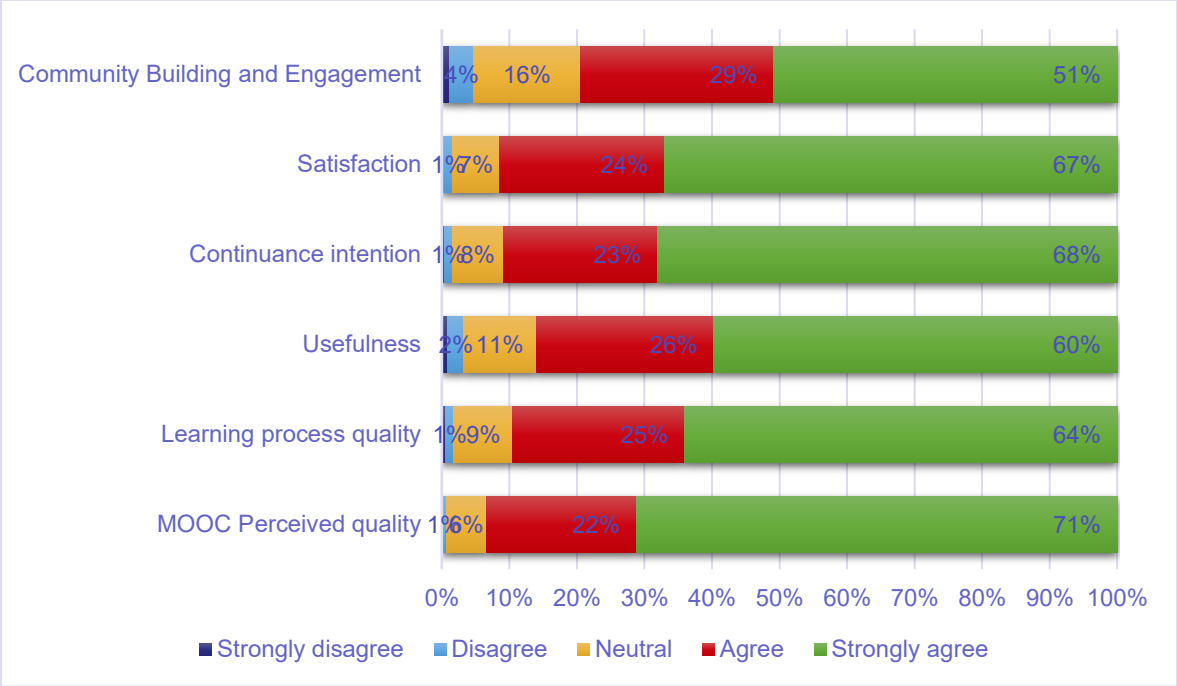


**Figure 9. Evaluation of MOOC learning experience by the trainees**

Participants were also asked to share what they enjoyed most about taking part in the course. Based on a thematic analysis of participants' reflections, several recurring themes emerged regarding what they most enjoyed during the course. A significant number of learners appreciated the interactive and inclusive learning environment, particularly highlighting the forum discussions as a space that fostered meaningful exchange and peer learning. Many valued the community atmosphere, where they could "share and read different views," "connect with educators globally," and "feel supported by like-minded professionals."

Another key theme was the practical relevance and real-world applicability of the content. Participants frequently mentioned how the videos, examples, and assignments helped them relate the material to their own classrooms and teaching contexts. The professionalism and guidance from the trainers were also widely acknowledged. Respondents described the trainers as well-prepared and responsive, offering useful feedback and motivating support throughout the course. Some participants highlighted how self-assessment quizzes and interactive videos made complex concepts easier to grasp and retain.

Finally, many participants enjoyed the flexibility and self-paced nature of the MOOC, which allowed them to learn according to their own schedule and balance other

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responsibilities. This flexibility, combined with high-quality materials and a welcoming community, contributed to a positive and empowering learning experience for most respondents.

Figure 10 illustrates participants' preferences for different course content and activities offered throughout the course. Study documents and narrated videos with transcripts were both (highly) preferred by the majority (88%) of respondents. Interactive resources (91%), self-reflection assignments (89%), and quizzes (92%) were among the most favored components. Tutor support (83%) and online forums (80%) also received strong positive responses. Overall, the data reflect a high level of satisfaction, with minimal negative feedback across all content types.

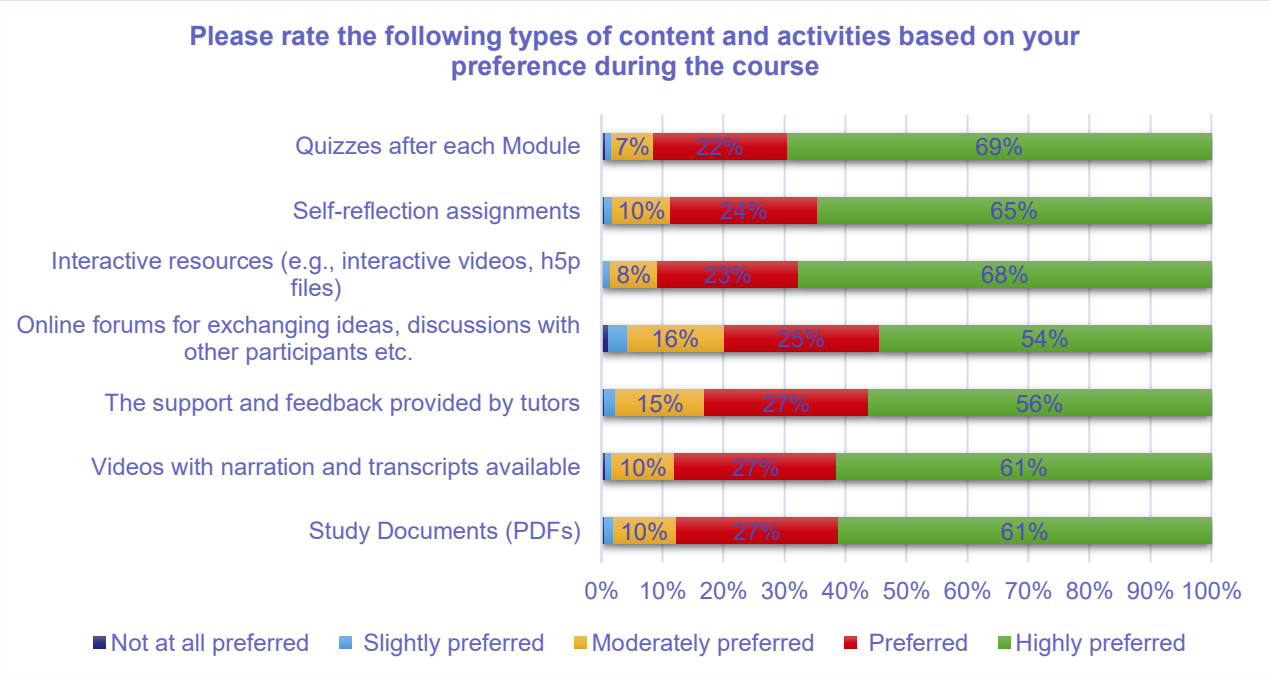


**Figure 10. Evaluation of preferred MOOC content and activities**

Participants were also asked whether they encountered any challenges or barriers during the MOOC that may have impacted their participation. They were encouraged to describe these challenges and propose potential solutions, if applicable.

One of the most commonly mentioned issues was balancing time between professional, personal, and course-related responsibilities. Many educators reported difficulty keeping up with the weekly pace, especially given the number of modules and

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forum discussions. As one participant explained, “There were a lot of modules each week… I had to put aside basic family obligations to finish.” Others noted that weekend time was often the only available window for study.

Language limitations emerged as another critical barrier. Although study documents were available in multiple languages, participants emphasized the need for full multilingual support, particularly in assessments and forum discussions. The reliance on English created accessibility concerns for non-native speakers. One participant noted, “I used translation tools, but sometimes the meaning was lost.” Another shared, “Since it wasn’t available in Greek, I needed extra time to understand the texts.”

Technical challenges were also mentioned, including difficulties with navigating the learning platform, watching videos, or accessing the MOOC from mobile devices. A few participants found the interface unintuitive and suggested onboarding tutorials or improved mobile compatibility. At the same time, the density of weekly content and the number of tasks were found overwhelming by some. “Week 3 was really intense—it was hard to complete everything within a week,” shared one respondent.

While the asynchronous design of the MOOC was generally appreciated, a number of participants expressed interest in having more opportunities for real-time interaction, such as live sessions or smaller breakout discussions. This was seen as a way to deepen understanding and increase engagement. In large forums, some participants reported feeling lost or hesitant to contribute, especially those lacking confidence in their English or in the value of their contributions. One participant stated, “I felt unsure whether what I had to say was good enough to share.”

Several constructive suggestions were put forward. These included implementing flexible timelines, clarifying which materials were essential and which optional, and reducing cognitive overload through simpler weekly structures. Participants also emphasized the importance of inclusive facilitation, such as providing encouragement in forums and acknowledging all contributions. “Even a small message from the tutor would have helped me feel more supported,” one educator reflected.

Language support was another major theme, with learners asking for fully translated quizzes and better use of subtitles. As one person noted, “Having all parts of the course in multiple languages, not just the documents, would make a big difference.”

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In terms of technical support, participants proposed clearer login instructions, mobile-friendly design, and readily accessible help. Suggestions for strengthening interaction included topic-based discussion groups and live Q&A sessions. Finally, to support motivation and learning progress, learners called for more feedback, particularly on self-assessment tasks or reflection activities.

Figure 11 illustrates participants' potential interest in enrolling in a similar course in the future. Over 90% expressed a willingness to do so, with no respondents indicating a negative response. This is a noteworthy outcome, suggesting that despite any challenges, the MOOC was highly successful overall and left a strong, positive impression on the vast majority of participants.

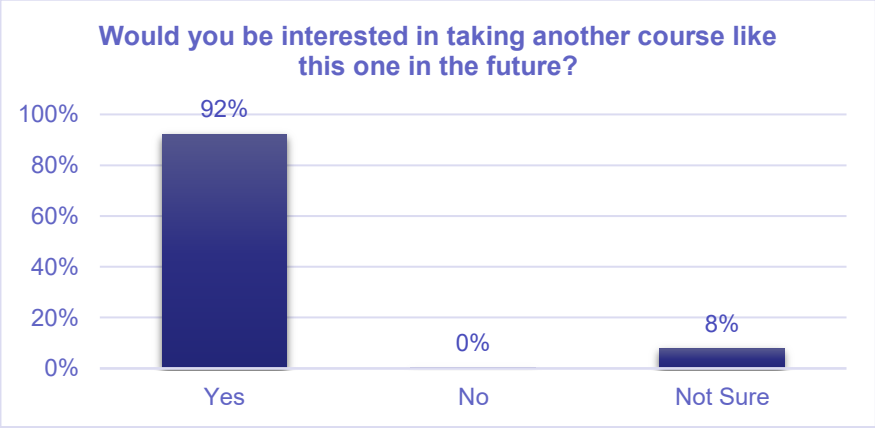


**Figure 11. Interest of participants to follow similar courses like MOOC**

Participants were also asked to suggest additional topics they would be interested in exploring in future courses related to Inclusive STEAM Education. Thematic analysis of the open-ended responses reveals a strong interest in expanding knowledge on inclusive and innovative pedagogical approaches within STEAM education. Many participants expressed a desire to learn more about practical strategies for inclusive classroom management, differentiation, Universal Design for Learning (UDL), and the application of assistive technologies to support students with disabilities. Several highlighted the importance of integrating social-emotional learning (SEL), culturally responsive teaching, and gender equity into STEAM curricula to ensure relevance and inclusiveness for diverse learners. Another prominent theme was the need for more support in creating interdisciplinary learning scenarios and project-based learning activities that align with real-world challenges and career skills. Participants also

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expressed a wish to explore tools and methodologies for collaborative lesson planning, both among teachers and across disciplines. The integration of emerging technologies, such as artificial intelligence, robotics, and augmented reality—was also a recurring interest, particularly in terms of accessibility and engagement. Moreover, many respondents showed curiosity about how to effectively assess diverse learners, apply inclusive practices in early childhood or gifted education, and promote community and family engagement in STEAM activities. A smaller yet notable number of participants wished to explore how to incorporate environmental sustainability and humanities into STEAM, connecting scientific learning with ethical, social, and global issues. Lastly, requests for good practices, real classroom examples, and international case studies underline a shared interest in grounded, actionable learning that can be transferred to everyday teaching contexts.

## 3.2 Blended course assessment

The evaluation process for the blended course followed the same procedure used for assessing the MOOC. However, the blended course was split into two distinct groups: a pre-service group, consisting of individuals who were not yet educators (such as students or those without teaching experience), and an in-service group, made up of experienced educators already active in the profession.

The evaluation included the following steps:

- At the start of the blended course, a voluntary questionnaire was distributed to participants. This initial survey received responses from 21 individuals in the pre-service group and 163 from the in-service group.
- A second voluntary questionnaire was administered at the end of the official course period, with 9 participants responding from the pre-service group and 98 from the in-service group.

### 3.2.1. Demographics of the Blended course

Demographic characteristics of the **pre-service participants** were collected in two stages-before and after the course period (Figures 12 and 13). A total of 21 responses were recorded in the pre-course questionnaire and 9 in the post-course. Several comparisons between the two surveys reveal interesting trends:

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- The majority of respondents in both surveys identified as female-90% pre-course and 89% post-course. Male participation increased slightly from 5% to 11%.
- Participants were mostly in the 18-24 age group, increasing from 57% before the course to 67% after.
- Pre-course responses were more diverse, with the majority coming from Greece (67%), followed by Cyprus and Bulgaria. After the course, only Greece and Portugal were represented.
- Before the course, participants came from a variety of teaching fields, with a slight majority in special or primary education. Post-course, responses were distributed across all categories, but in very small numbers.

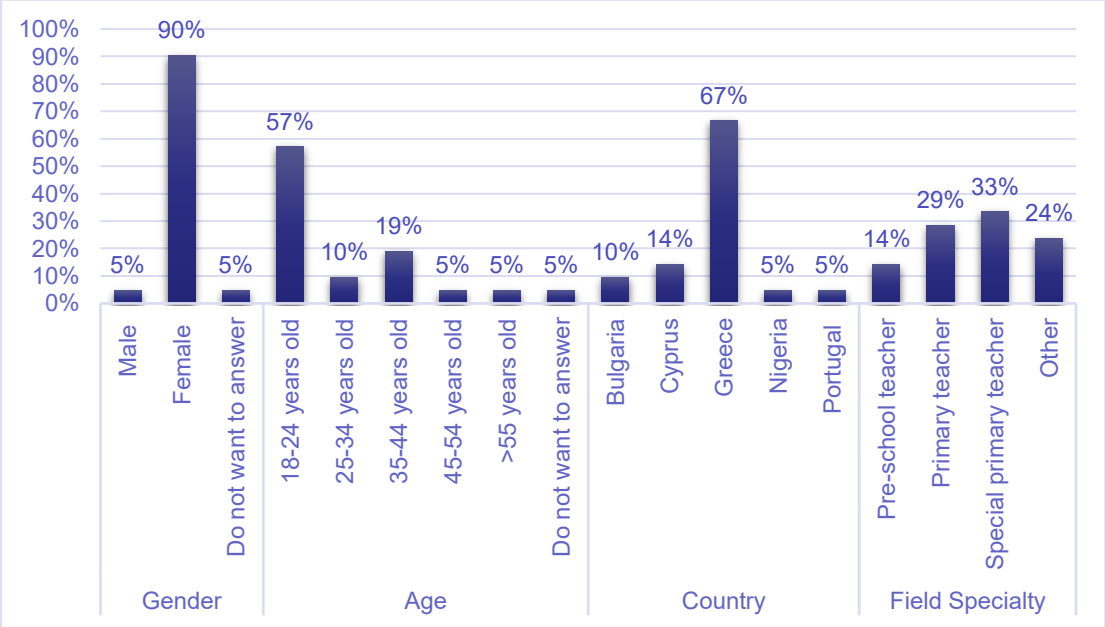


**Figure 12. Demographics of pre-blended pre-service survey**

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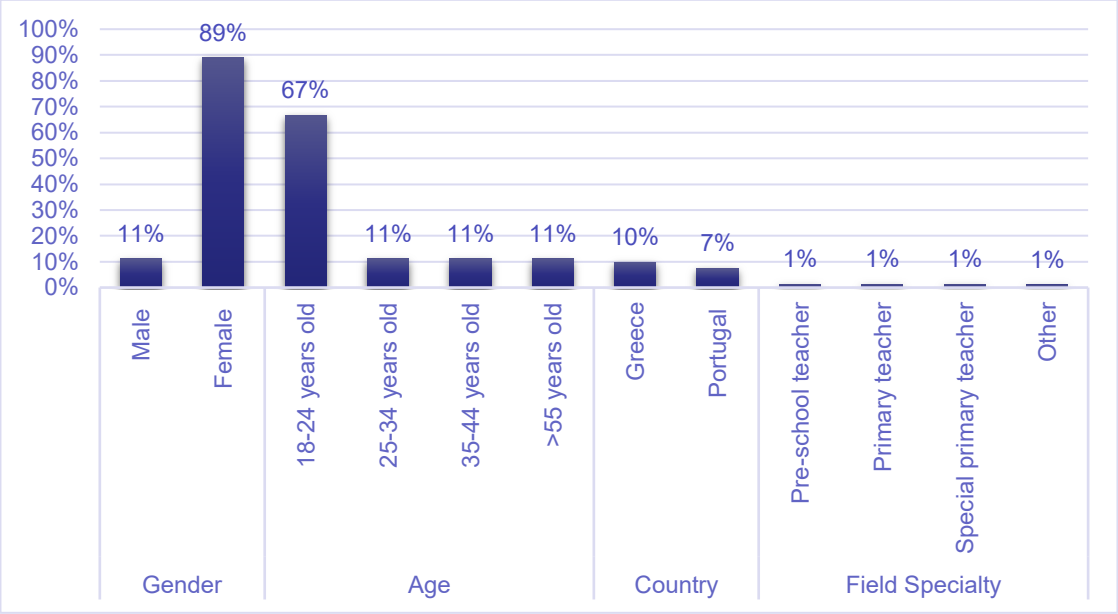


**Figure 13. Demographics of post-blended pre-service survey**

Demographic characteristics of the **in-service participants** were collected before and after the course period (Figures 14 and 15). The pre-course survey included 163 responses, while the post-course survey included 98 responses. Several notable trends emerged from the two surveys:

- Gender distribution remained relatively stable, with female participants making up the majority in both surveys, 77% pre-course and 80% post-course. Male participation decreased slightly from 23% to 20%.
- The 35-44 and 45-54 age groups formed the core of both datasets (38% and 34% pre-course; 39% and 34% post-course). The percentage of participants over 55 years increased significantly, from 11% before the course to 56% after.
- Greece is the largest group (44% pre-course and 42% post-course). The range of countries represented deceased slightly in the post-course survey.
- Field specialty data showed some shifts, with the percentage of primary teachers increasing from 32% to 35%, while pre-school teachers decreased from 14% to 9%.
- Teaching experience in general education showed a shift towards more experience, with those with more than 20 years increasing from 28% to 32%, and those with more than 30 years increasing from 4% to 5%.

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- Patterns of experience in special education remained stable, with the majority having 2–10 years of experience (65% pre-course and 63% post-course). Small increases were observed in both the less than 2 years and more than 20 years categories post-course.

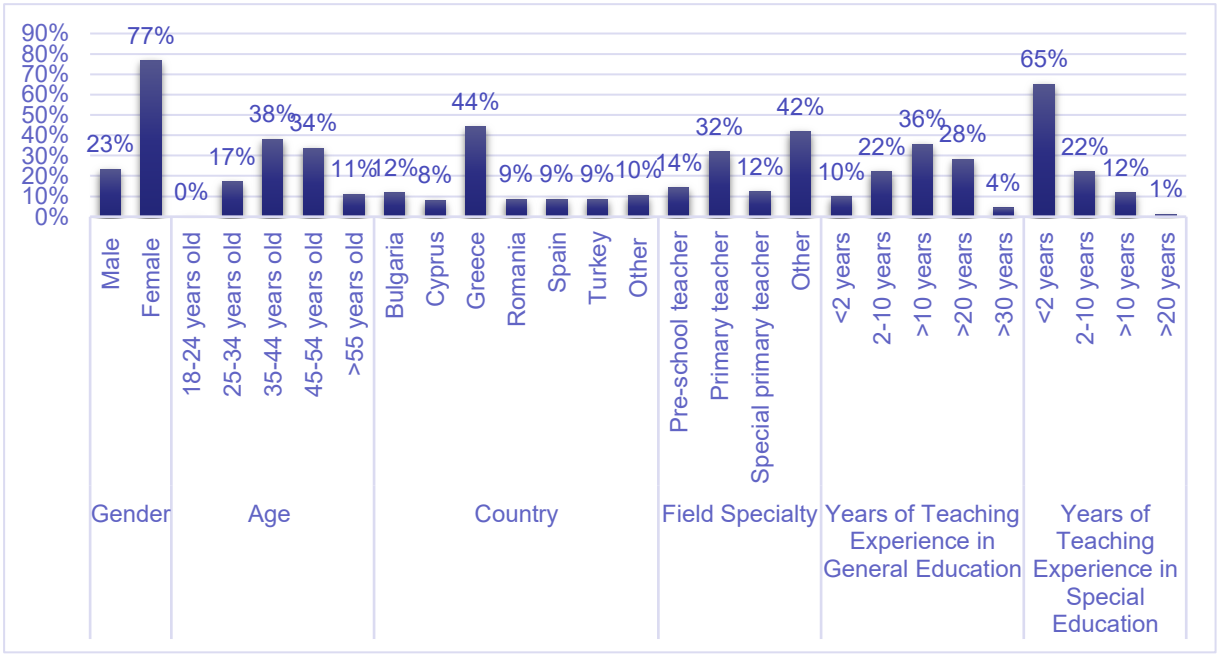


**Figure 14. Demographics of pre-blended in-service survey**

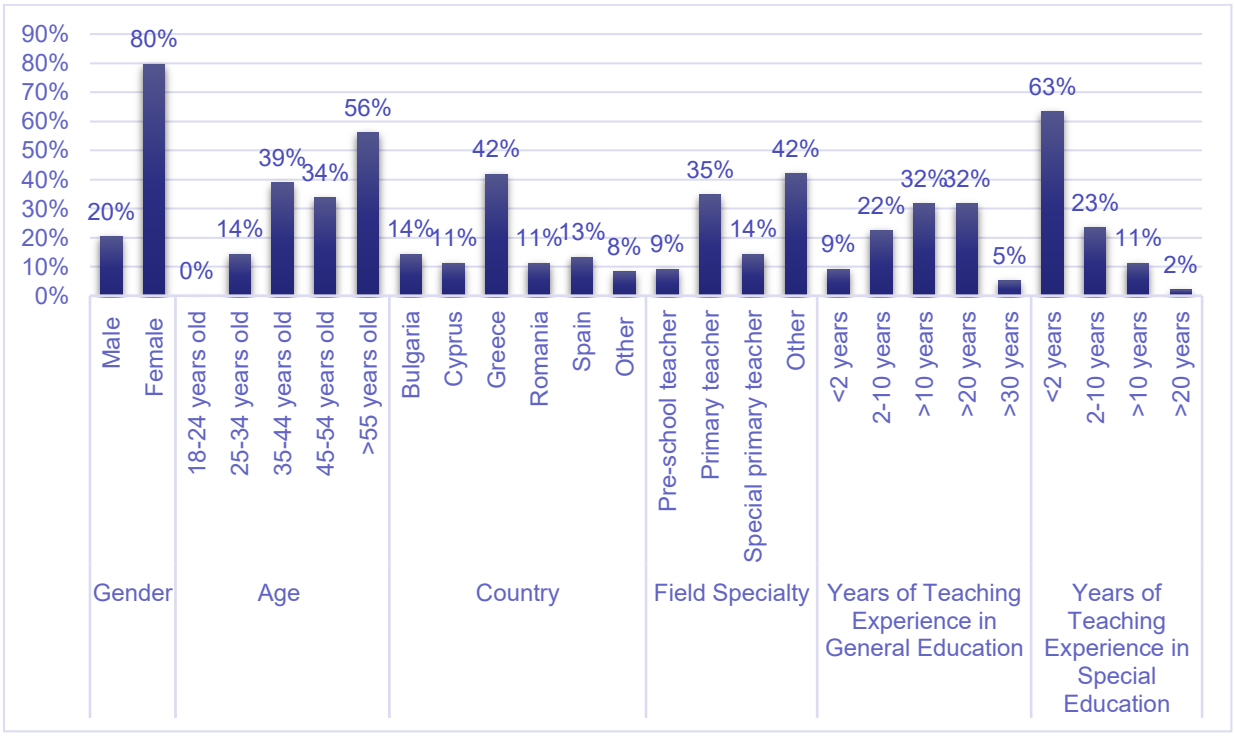


**Figure 15. Demographics of post-blended in-service survey**

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### 3.2.2. The pre-Blended course results

The pre-blended survey (Figures 16 and 17) results show that most pre-service participants (86%) had no prior experience implementing STEAM projects and only a small percentage (38%) felt confident applying Inclusive STEAM principles in the classroom. In contrast, in-service respondents reported more varied experience, with 77% having at least some experience and higher overall confidence levels (46%). While pre-service participants mostly felt neutral or only slightly confident, in-service teachers showed greater confidence, although many reported moderate confidence.

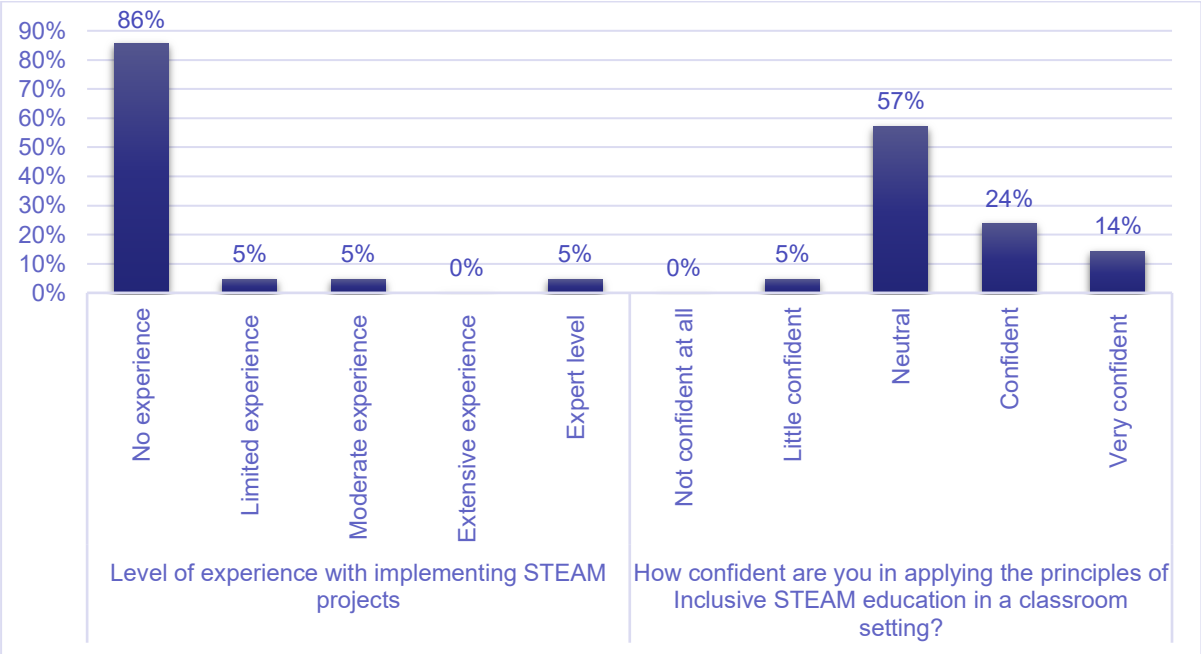


**Figure 16. Prior knowledge/experience of pre-service respondents according to pre-blended survey**

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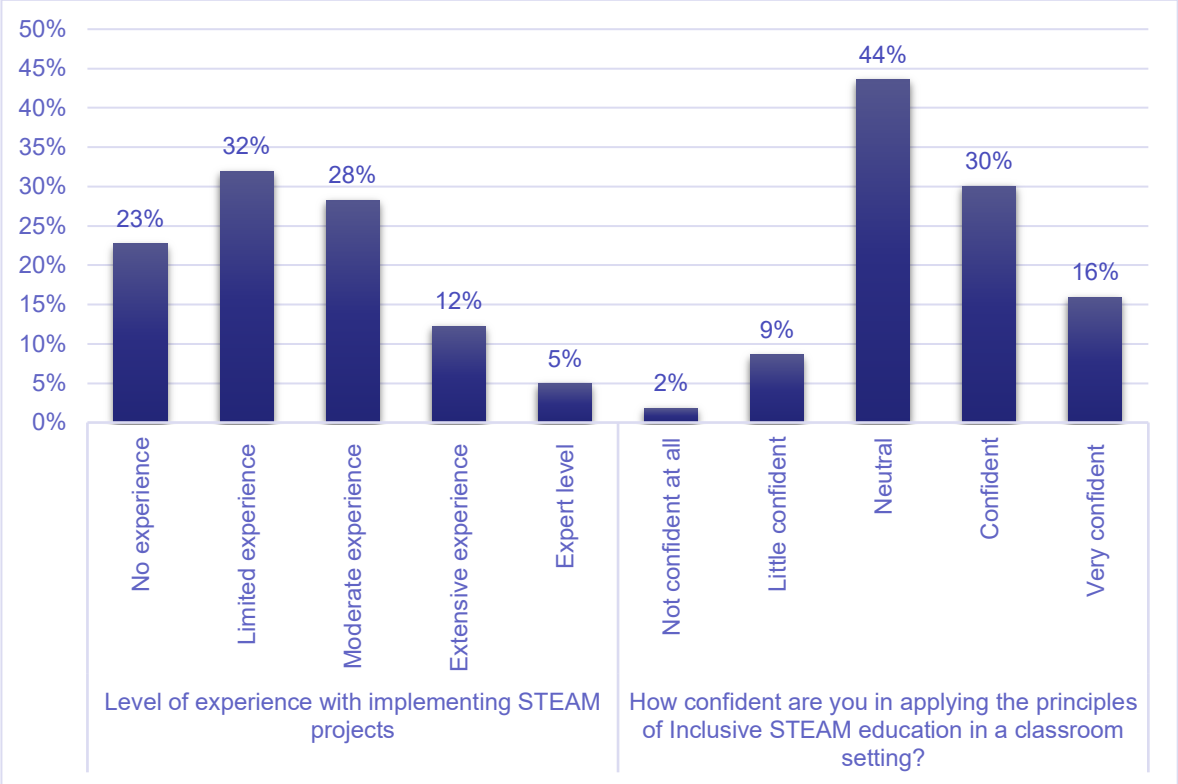


**Figure 17. Prior knowledge/experience of in-service respondents according to pre-blended survey**

Regarding participants' expectations from the blended course, the following are the most important observations that emerge from Figures 18 and 19:

- Both pre-service and in-service participants expressed strong interest in acquiring new skills (86% and 93%, respectively) and knowledge (85% and 93%) in Inclusive STEAM education. Access to educational resources was also a key goal for 86% of pre-service and 94% of in-service participants. There was a strong interest in collaborating with experts (71% pre-service, 90% in-service) and collaborating with peers (76% pre-service, 86% in-service), and participants were also motivated by certification (81% pre-service, 66% in-service) or gaining a competitive advantage (77% pre-service, 65% in-service).
- Regarding expected impact, the majority hoped to apply the knowledge they had gained in their current roles (95% pre-service, 92% in-service), with many also aiming to improve their current jobs (86% pre-service, 80% in-service). In-service respondents showed more interest in influencing organizational practices (83%), while pre-service participants showed slightly higher

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expectations regarding professional development and practical classroom application.

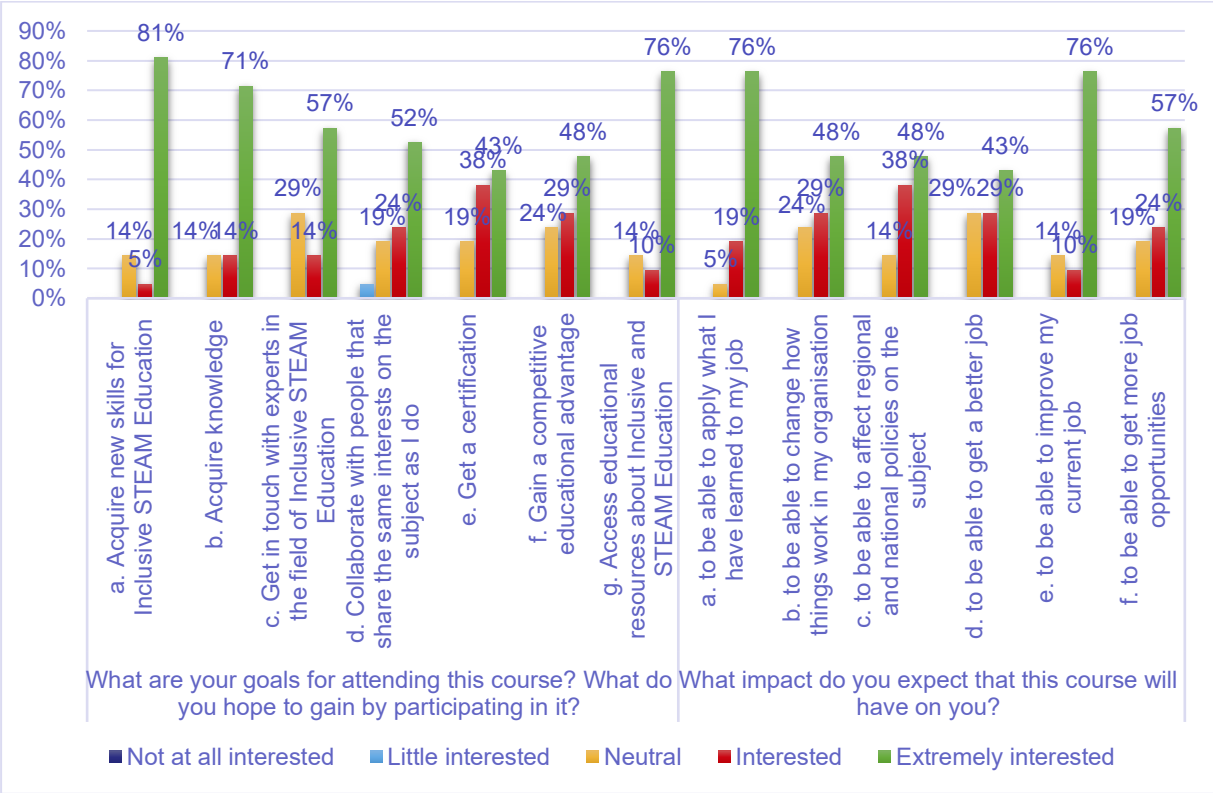


**Figure 18. Expectations from the pre-service course according to the pre-blended survey**

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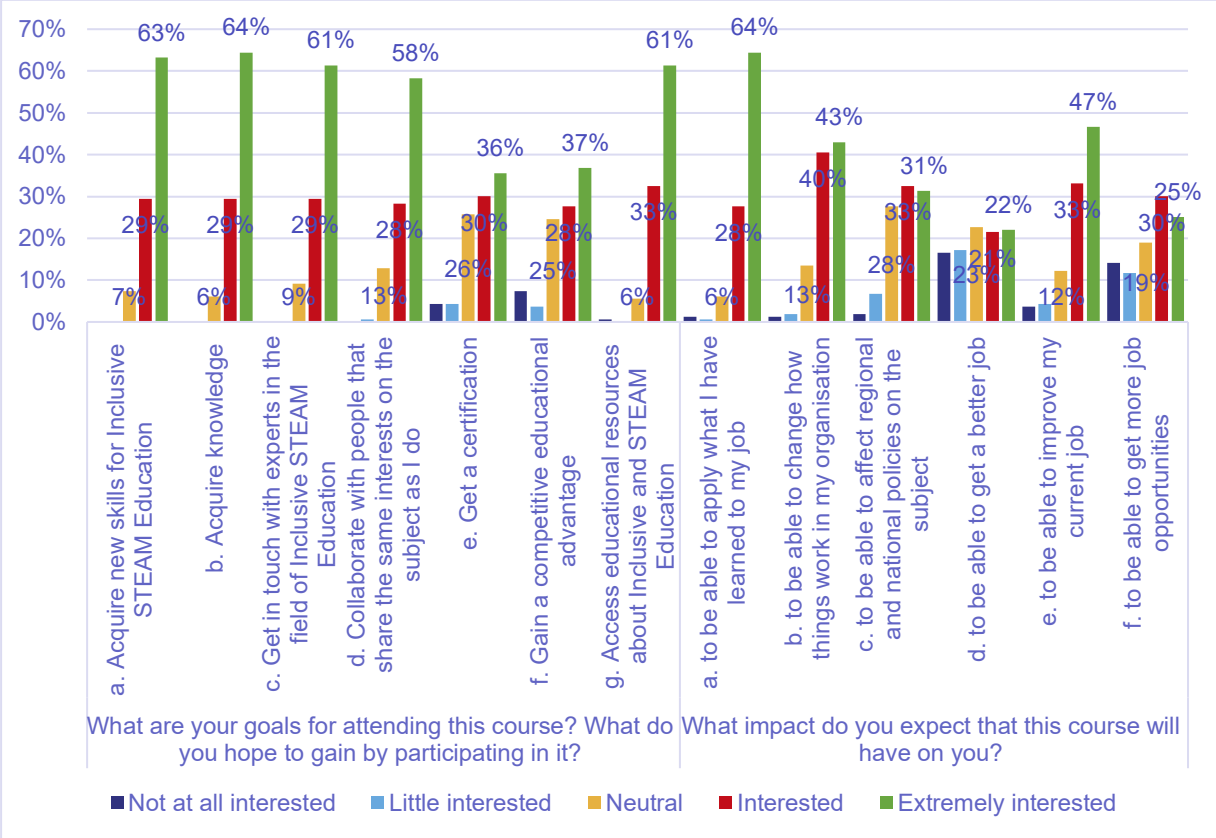


**Figure 19. Expectations from the in-service course according to the pre-blended survey**

### 3.2.3. The post-Blended course results

The survey results, from both pre-service and in-service participants, reflect a high level of satisfaction with the blended learning course on Inclusive STEAM education (Figures 20 and 21). Among pre-service participants, 100% reported being either satisfied or extremely satisfied, while 94% of in-service participants shared the same positive sentiment. Expectations were also fully met across both groups: 78% of pre-service respondents indicated the course completely met their expectations, compared to 47% of in-service respondents, with another 47% of the latter stating that their expectations were mostly met. Regarding the alignment of the content with initial objectives, 100% of pre-service and 89% of in-service participants found the course content aligned or highly aligned with their goals.

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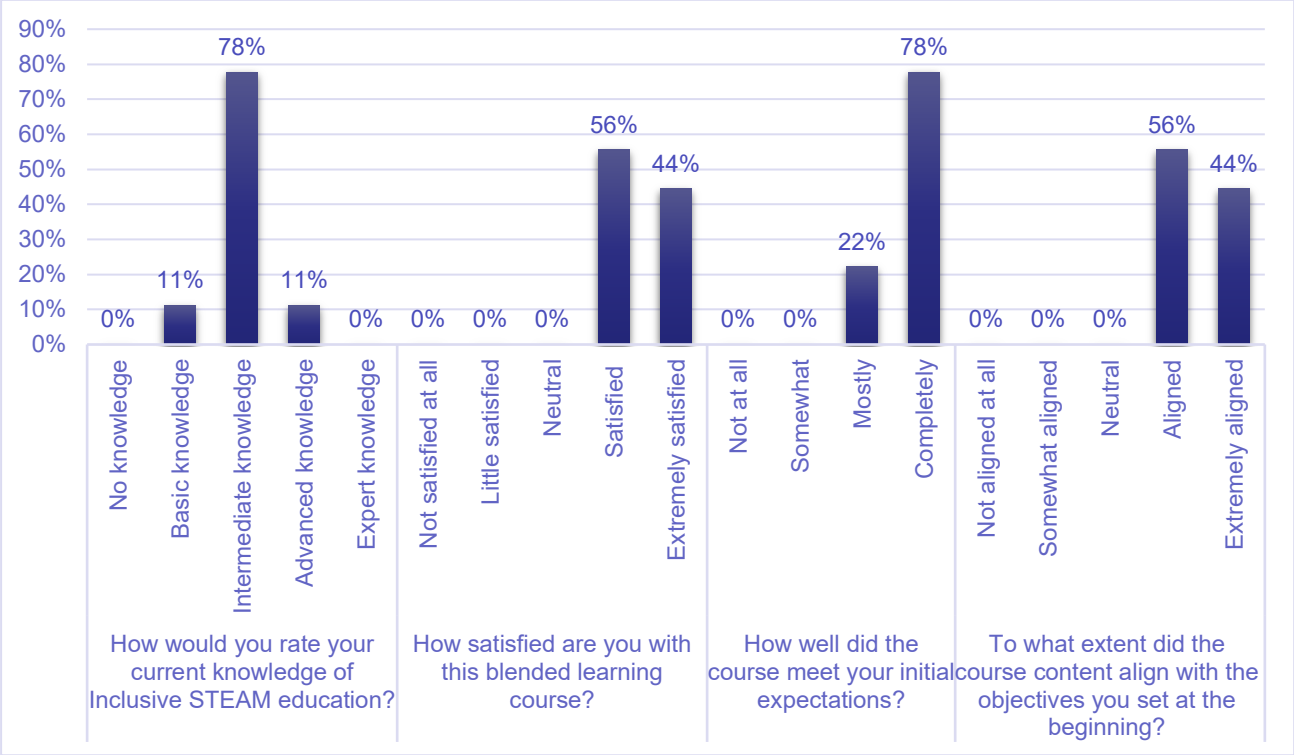


**Figure 20. Level of satisfaction with the pre-service blended course**

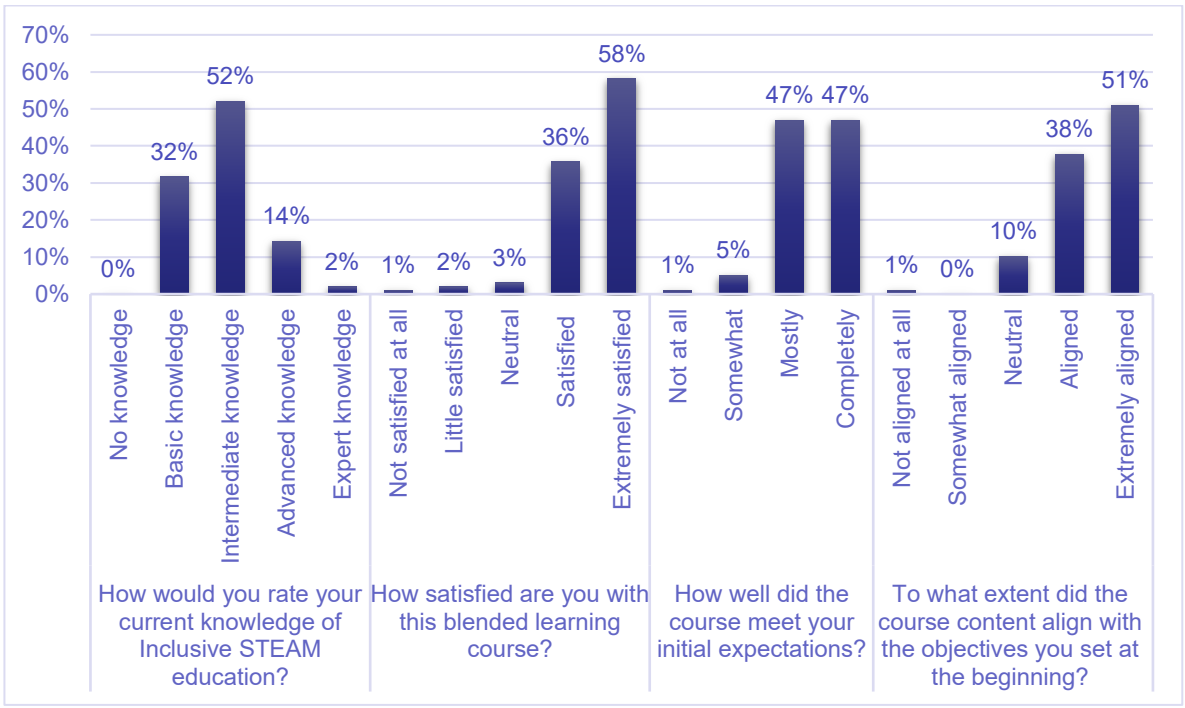


**Figure 21. Level of satisfaction with the in-service blended course**

Participants from both pre-service and in-service groups reported significant benefits from the blended learning course in Inclusive and STEAM Education (Figure 22).

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Almost all gained new knowledge and skills, with 100% of pre-service and over 85% of in-service respondents confirming these results. Access to educational resources was also highly valued, as noted by 100% of pre-service and 94% of in-service participants. Many reported connecting with experts and collaborating with peers. Additionally, most participants−89% of pre-service and 74% of in-service−confirmed they gained a certification.

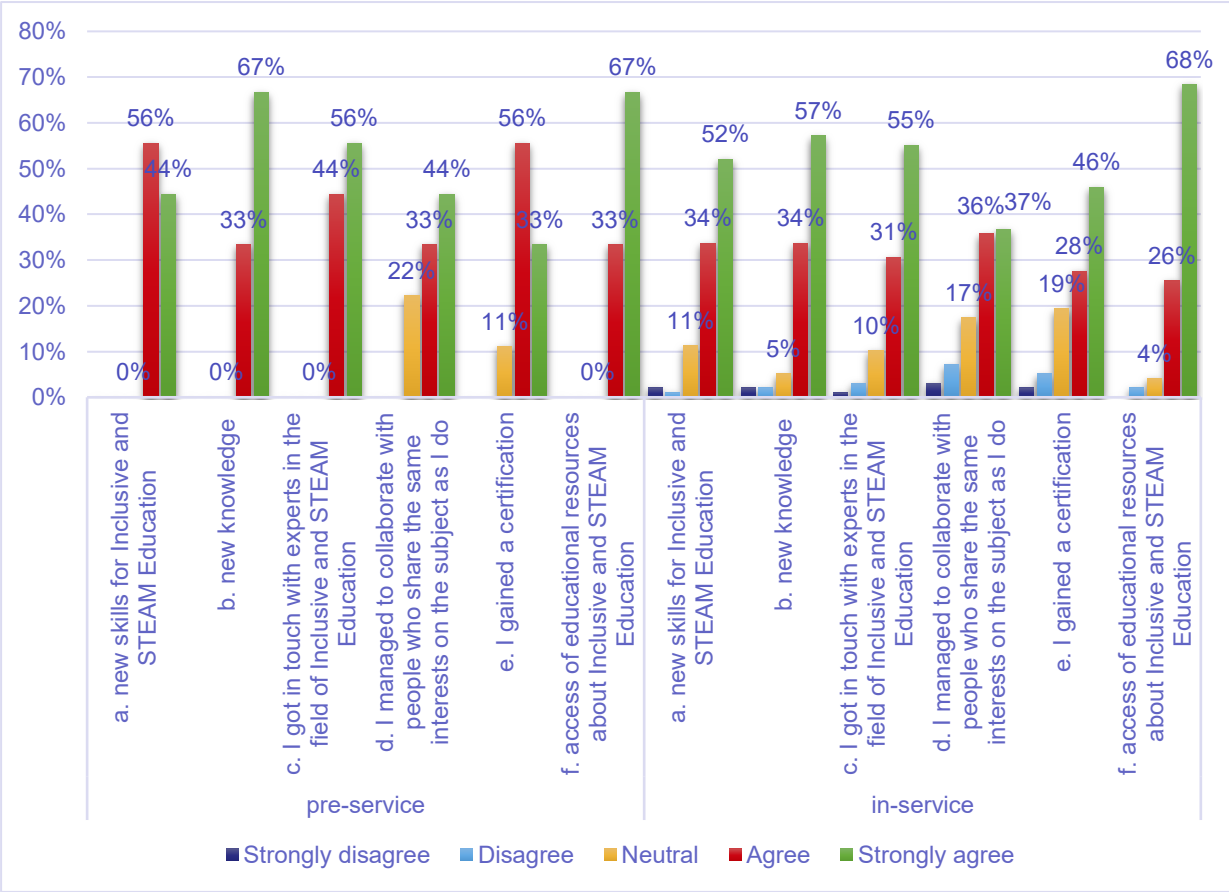


**Figure 22. Benefits of the blended course according to the post-blended survey**

Figure 23 shows that almost all pre-service patcipants and over 80% of in-service participants agreed they could apply what they learned to their current jobs. Also, 88% of pre-service and 62% of in-service participants felt that they could influence change within their organizations. Notably, 88% of pre-service and 44% of in-service participants believed the course could help them contribute to regional or national policy changes in Inclusive and STEAM Education. Additionally, 100% of pre-service and 47% of in-service participants said the course could help them get a better job, while 78% of pre-service and 71% of in-service participants felt it could improve their

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current roles. Furthermore, the potential for increased job opportunities was widely recognized−by 100% of pre-service and 51% of in-service participants.

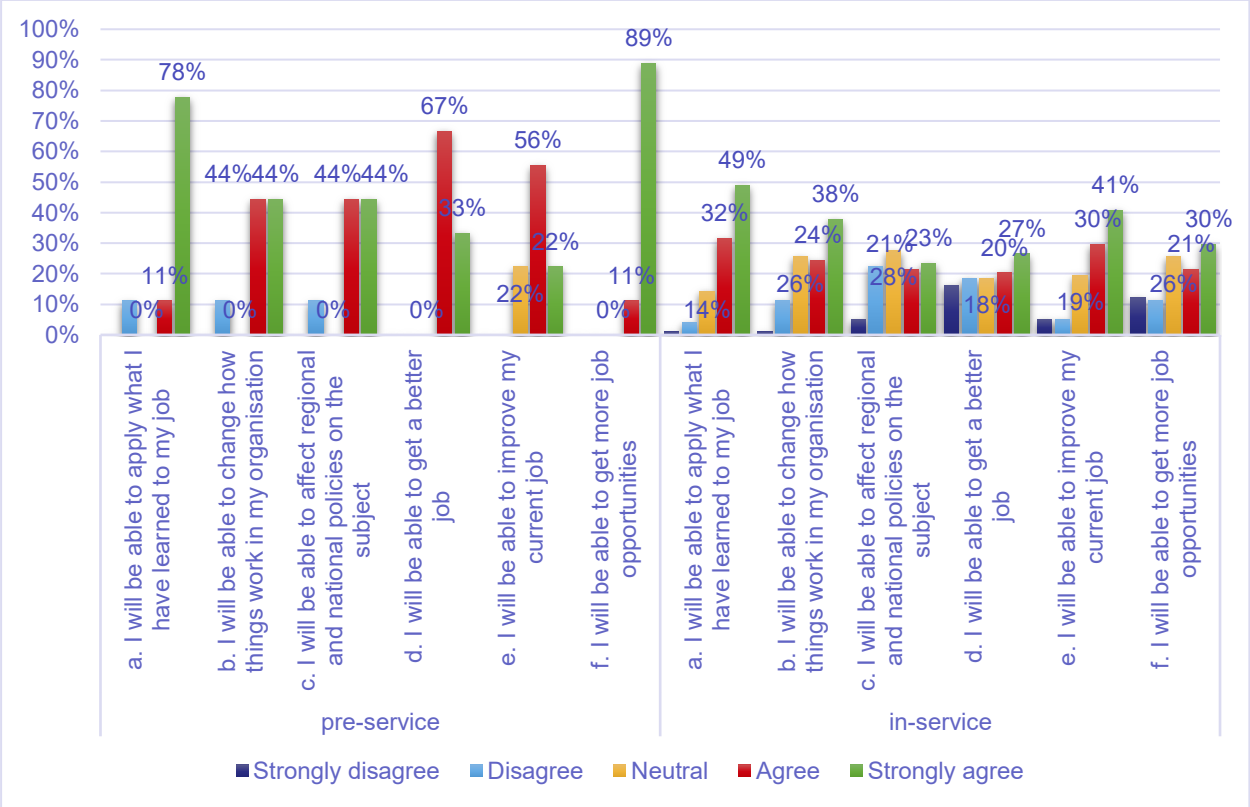


**Figure 23. Impact of the blended course according to the post-blended survey**

The evaluation of various aspects of the course, as shown in Figure 24, reveals high levels of satisfaction among participants. In the pre-service course, evaluations were overwhelmingly positive, with 78% of participants rating the quality of the course content and interaction with instructors as excellent, and the remainder rating them as very good. The effectiveness of the learning activities and the quality of the online sessions were also highly rated, with 67% and 56% rating them as excellent respectively. Similarly, the in-service course received strong feedback, with 64% rating the course content as excellent and 33% as very good. The quality of the online sessions and learning activities received 62% and 60% respectively in the top category. Instructor interaction was positively rated by 81% of participants (54% excellent, 27% very good), while interaction with peers, although slightly lower, was rated positively by 73% (47% excellent, 26% very good).

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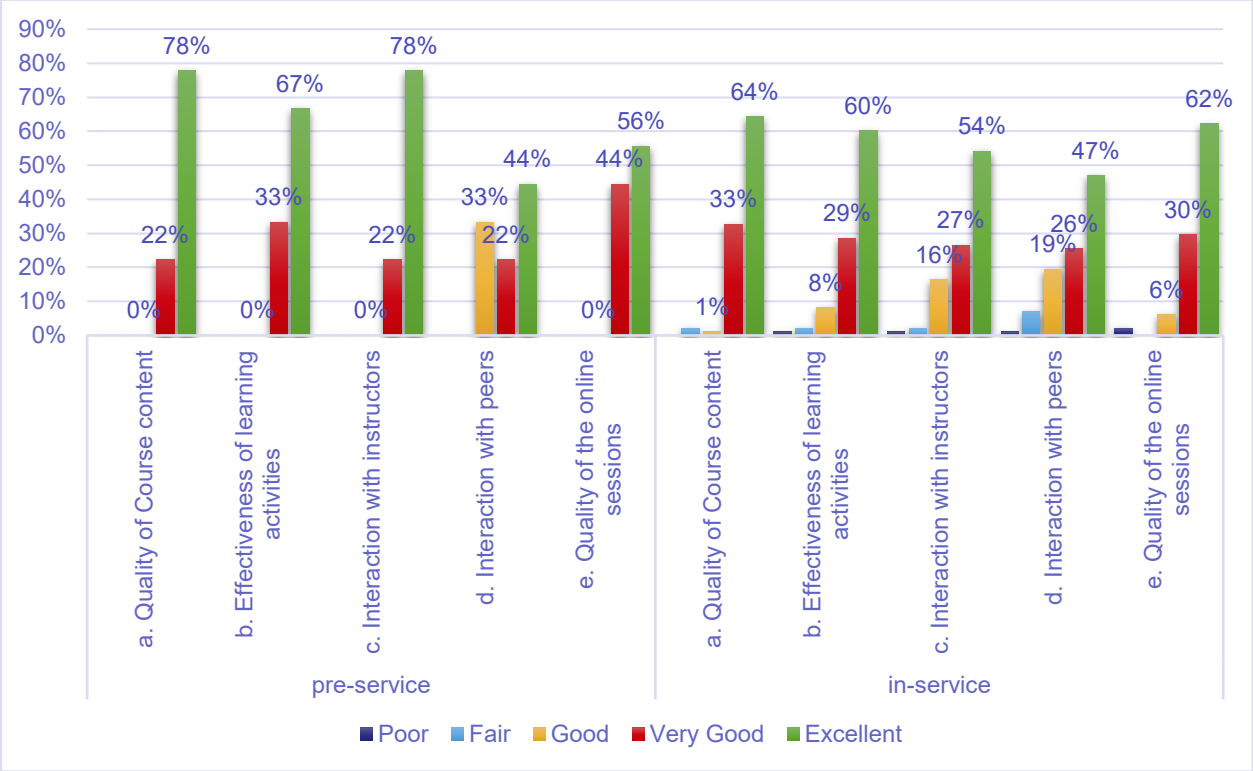


**Figure 24. Evaluation of the blended learning experience by the trainees**

Figure 25 shows that participants in both the pre-service and in-service courses had a very positive experience with the Virtual Learning Platform. In the pre-service course, the ease of navigation and the user interface were particularly well received, with 89% and 67% of respondents rating them as excellent, respectively. Accessibility of course material was also rated by 78% as excellent. Similarly, in the in-service course, satisfaction remained strong: 89% of participants rated the ease of navigation as very good or excellent, while the user interface received 87% in the first two categories. Accessibility of the course material was higly praised, with 91% of respondents rating it as very good or excellent.

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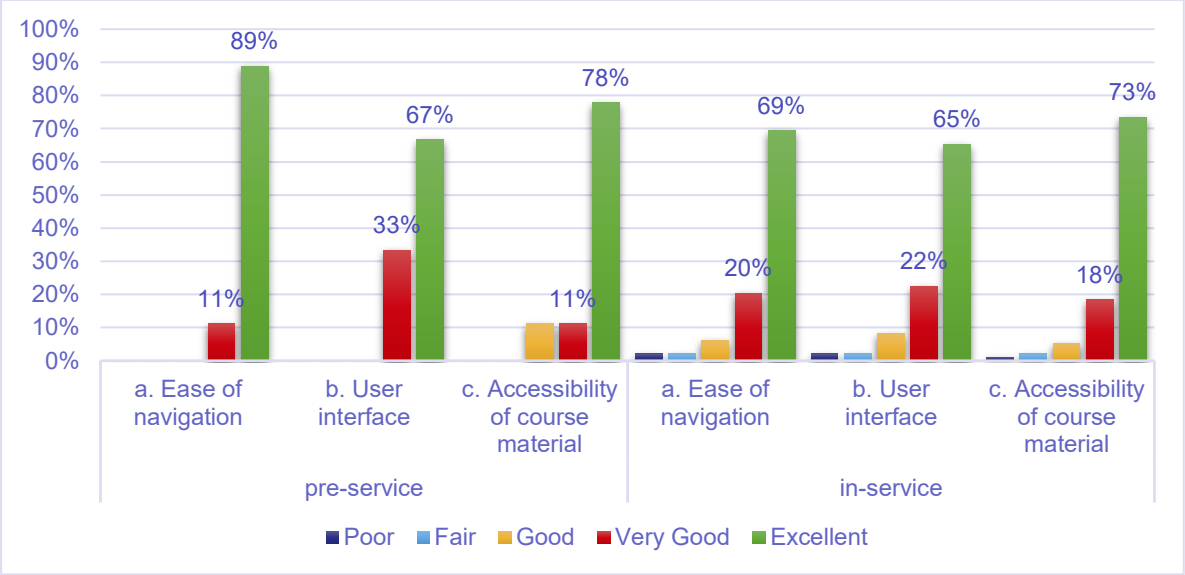


**Figure 25. Evaluation of the Virtual learning platform by the trainees**

Thematic analysis of participants' responses regarding the strong points of the blended course highlights several recurring advantages that contributed to the perceived quality and value of the learning experience. One of the most frequently mentioned strengths was the clear and well-structured content, which many participants found relevant, up-to-date, and directly applicable to real classroom conditions. The inclusion of practical resources, case studies, and examples was considered particularly helpful, enabling participants to connect theory with practice.

Another key theme was the flexibility and accessibility of the blended format. Participants appreciated the ability to access materials and attend sessions online, allowing them to manage their personal and professional obligations more easily. The interactive elements, such as forums and live sessions, were also viewed positively, offering space for peer exchange, reflection, and collaboration.

Several respondents emphasized the inclusive teaching strategies and the focus on diversity, as well as the opportunity to explore tools like LAMS and assistive technologies. The expertise and approachability of the trainers further contributed to a supportive learning environment, fostering engagement without pressure.

Lastly, participants valued the community aspect of the course, noting the benefit of exchanging ideas with educators from different backgrounds and contexts. This intercultural dialogue, combined with an emphasis on creativity and empathy, helped reinforce inclusive values and collaborative spirit across the course. Despite some

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systemic limitations in recognition or application within local systems, the majority of participants described the course as a meaningful and impactful professional development experience.

Thematic analysis of the reported disadvantages of the blended course reveals several recurring concerns and suggestions for improvement.

Many participants highlighted time constraints and workload as significant challenges. The duration of the course was considered too short to cover complex concepts effectively, particularly when balanced with work and personal obligations. Several respondents noted that strict deadlines, illnesses, or scheduling conflicts (e.g. time zone differences) prevented them from completing tasks or attending sessions. Suggestions included offering more flexible deadlines, scheduling online sessions later in the day, and extending the course across a longer period or into modular formats.

A lack of clarity regarding the course structure and expectations was noted. Participants reported confusion about the sequence of activities, what was required before or after sessions, and where to find essential instructions (e.g. hidden in forum threads). They recommended clearer guidance from the start, outlining the course flow and required actions.

While the theoretical content was appreciated, several participants expressed the need for more practical applications, such as lesson planning, classroom-ready materials, and hands-on experience with inclusive tools or STEAM activities. They suggested integrating more real-life examples, differentiated by age group, and including collaborative assignments focused on implementation.

The LAMS component received mixed feedback. Some found it valuable and easy to follow, while others felt it required more time and practice to fully understand. A few participants commented that the emphasis on using this specific platform overshadowed broader pedagogical discussions on inclusive education. They suggested a better balance between learning design tools and foundational inclusion strategies.

There was a noted lack of interactive space for deeper discussions on inclusive education practices. Some participants found the sessions overly lecture-based and suggested incorporating more dialogue, peer exchange, and critical reflection opportunities.

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A few participants pointed out that subtitles in more languages (e.g. Romanian) would have improved accessibility. Others felt that examples provided were too general and not sufficiently adapted to different teaching contexts, ages, or learner needs.

Finally, participants requested continued access to materials, recordings, and a space for post-course networking. They also recommended including feedback mechanisms (peer or instructor) for submitted work to support deeper learning and reflection.

Figure 26 illustrates a strong interest among participants in enrolling in a similar course in the future. All pre-service participants (100%) expressed willingness to participate in a future course. Among in-service participants, 87% responded positively, while only 1% indicated they would not be interested, and 12% were unsure.

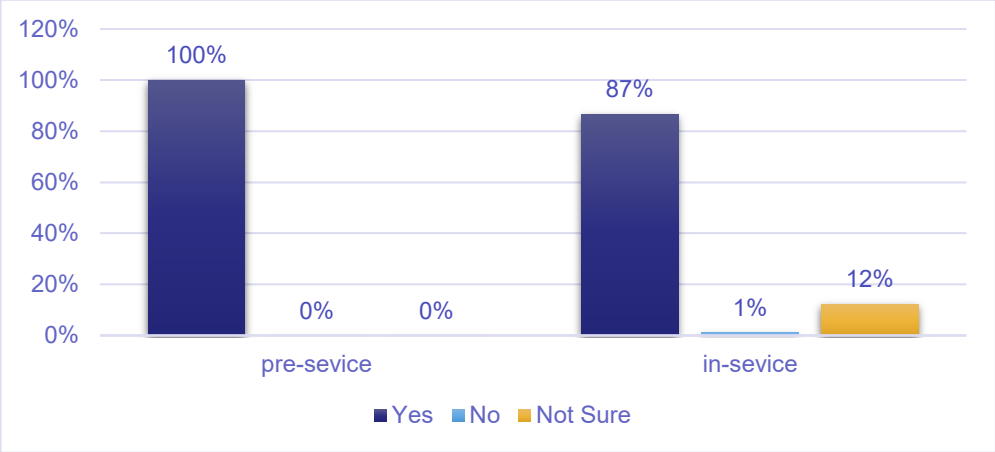


**Figure 26. Interest of participants to follow similar courses like blended course**

# 4. The focus group evaluation results

As part of the comprehensive evaluation of the SpicE training programme, three focus groups were conducted, two following the completion of the MOOC and one after the Blended Learning phase. The focus groups explored participant feedback on the training experience and collected suggestions for improvement and future scaling. Each session was structured into two parts: the first, led by EUN and the questions developed by HOU and EUN, focused on evaluation-related feedback, and the second, conducted by UCY, addressed exploitation and optimisation aspects to inform Deliverable 4.3.

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## 4.1 Focus Group Results after MOOC Completion

Participants praised the MOOC's structure and flexibility, noting that the modular and self-paced format allowed them to revisit content and manage their time effectively. The thematic organisation, covering STEAM, inclusion, and community-building, was considered pedagogically coherent and helpful in supporting their learning. Forum discussions were also valued for providing practical examples and space for collaborative reflection, inspiring some teachers to share materials with their colleagues.

Regarding content, participants highlighted the wide variety of materials and presentation formats. However, challenges included time constraints, language barriers (e.g. lack of full translation of assessments), and difficulties in adapting content for younger learners. While some found the forum discussions valuable for cross-country exchange, others suggested the implementation of an upvoting system to help navigate the large volume of responses. Assessments were seen as useful but occasionally confusing due to language nuances; participants appreciated the opportunity to revise incorrect answers and suggested more optional (self-assessment) quizzes. The overall progression of topics was deemed logical and effective in gradually introducing complex ideas.

## 4.2 Focus Group Results after Blended Learning

Participants in the post-blended focus group, primarily early childhood educators, emphasized the value of the synchronous sessions for real-time interaction, clarification, and engagement. While the asynchronous materials were clear and accessible, the live sessions were considered more dynamic and enabled deeper learning through immediate feedback. However, large group sizes limited opportunities for interaction with facilitators, and some participants suggested smaller group sessions to enhance active involvement.

The blended format was largely well-received, with the platform described as user-friendly and the assessment elements helpful for self-evaluation. Some limitations were noted regarding the applicability of activities for very young learners and the time constraints in implementing complex tools in early childhood settings. While participants appreciated the forum as a source of ideas, its structure was perceived as

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occasionally confusing due to the volume of messages and links. Despite minor technical issues, participants expressed overall satisfaction with the blended experience and emphasized the added value of combining synchronous and asynchronous learning opportunities.

# 5. Exchange Programs (Mobilities) assessment

The international exchange phase of the training included two mobility programmes, held in Alicante and Nicosia. Each mobility gathered participants from different countries who had successfully completed the earlier stages of the training pathway. The evaluation of the mobility experiences was conducted through a pre and post structured questionnaire focusing on participant demographics, expectations, and overall satisfaction.

At the beginning of the mobility, participants provided basic demographic information, such as gender, age, country of residence, field of specialisation, and education level. They were also invited to reflect on their expectations by rating the importance of different aspects of the mobility, including the training content, logistical arrangements, opportunities for international collaboration, and the cultural and social components of the programme.

Following the completion of the mobility, participants were asked to evaluate their overall experience. This included questions related to the quality of the training sessions and facilities, the usefulness of the content for understanding and applying Inclusive STEAM Education practices, the added value of cultural and social activities, and the extent to which the face-to-face setting improved cross-country collaboration. Finally, they were asked whether they would recommend participation in such mobility programmes to others.

## 5.1 Demographics of the mobility program

Demographic characteristics of participants were collected for the Alicante and Nicosia mobility programs (Figures 27 and 28). In both locations, the vast majority of participants were in-service teachers (89%), with only 11% identifying as pre-service. Female participants dominated in both programs, with 87% in Alicante and 85% in

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Nicosia. Most participants were aged between 35–44 years (38% in Alicante and 36% in Nicosia), followed by those aged 45–54 (30% and 32%, respectively). Participants came from a mix of countries, mainly Bulgaria, Cyprus, Greece and Spain. In both programs, primary education was the most common teaching field, representing over half of all participants (55% in Alicante, 53% in Nicosia). Smaller percentages were observed in special primary education (11% in both) and pre-school education (6%).

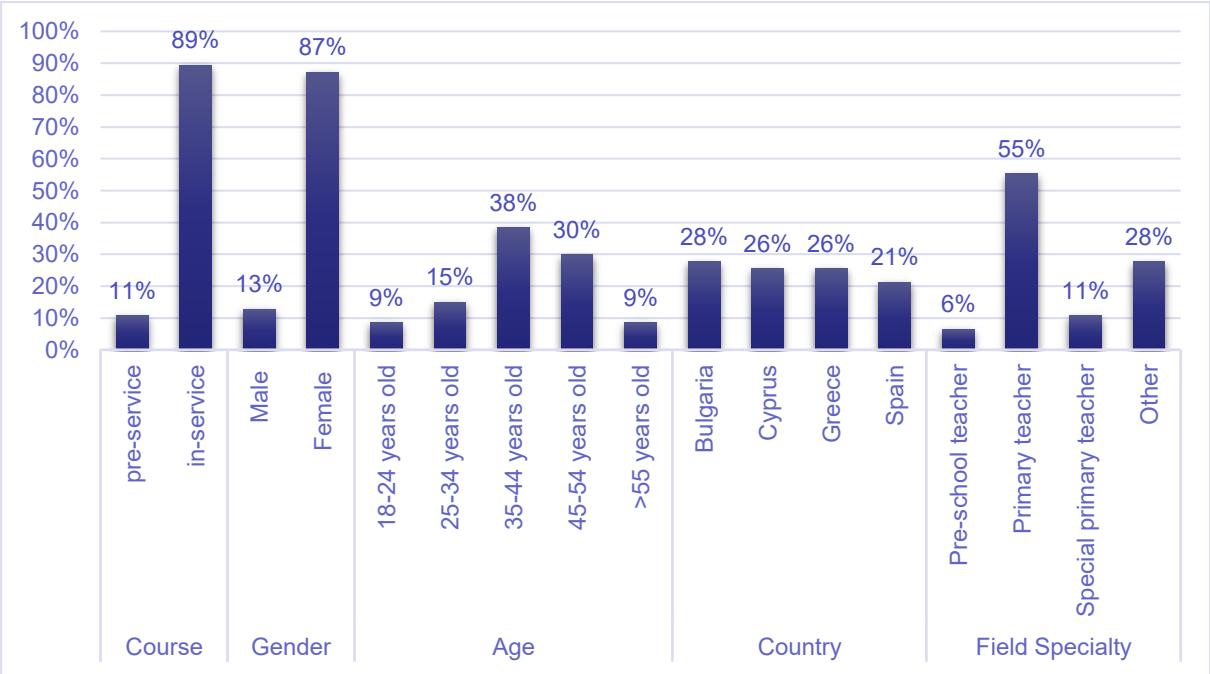


**Figure 27. Demographics of Alicante training mobility**

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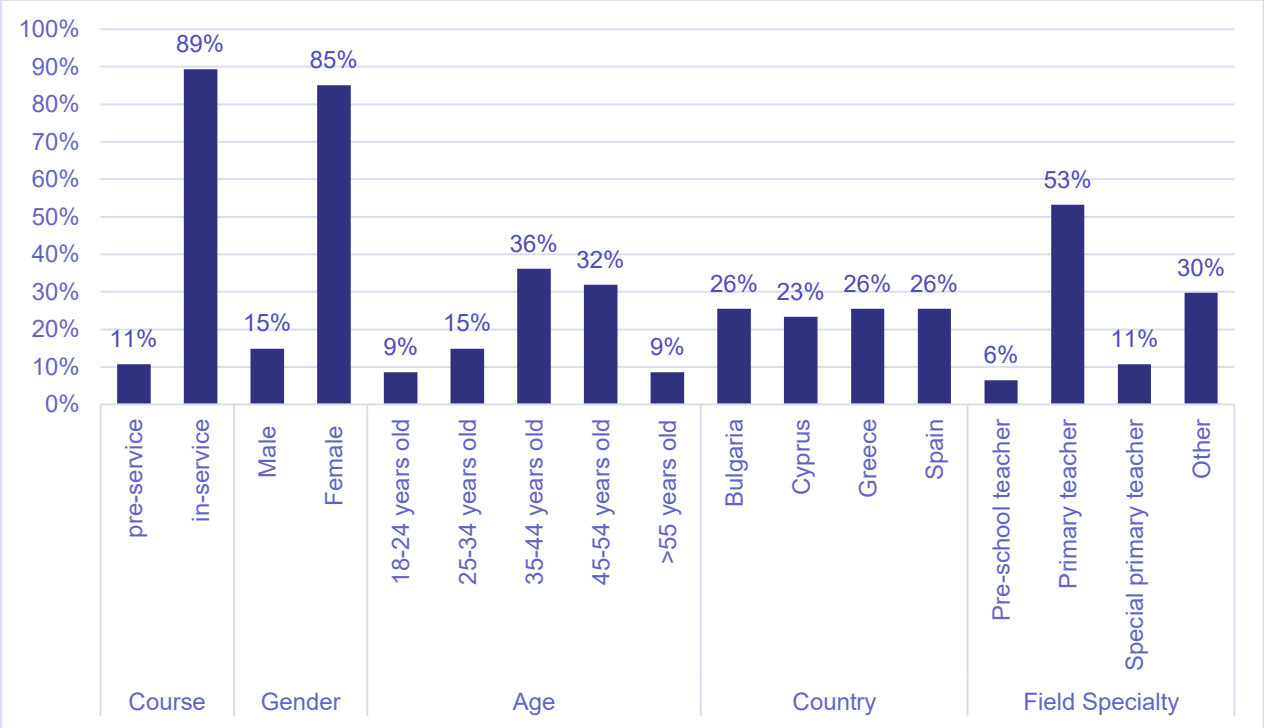


**Figure 28. Demographics of Nicosia training mobility**

## 5.2 Assessment results before mobility program

Participants from both the Alicante and Nicosia mobility programs rated the key aspects of their training experience as very important (Figure 29). In both locations, over 80% of respondents considered the training content and the collaboration with participants from other countries to be very important. Facilities and logistics also received a positive rating, although with slightly more varied responses, participants in Alicante rated them slightly more positively overall, while a small percentage in Nicosia considered them less important. Cultural and social activities were also valued, with 64% of respondents in both groups rating them as very important.

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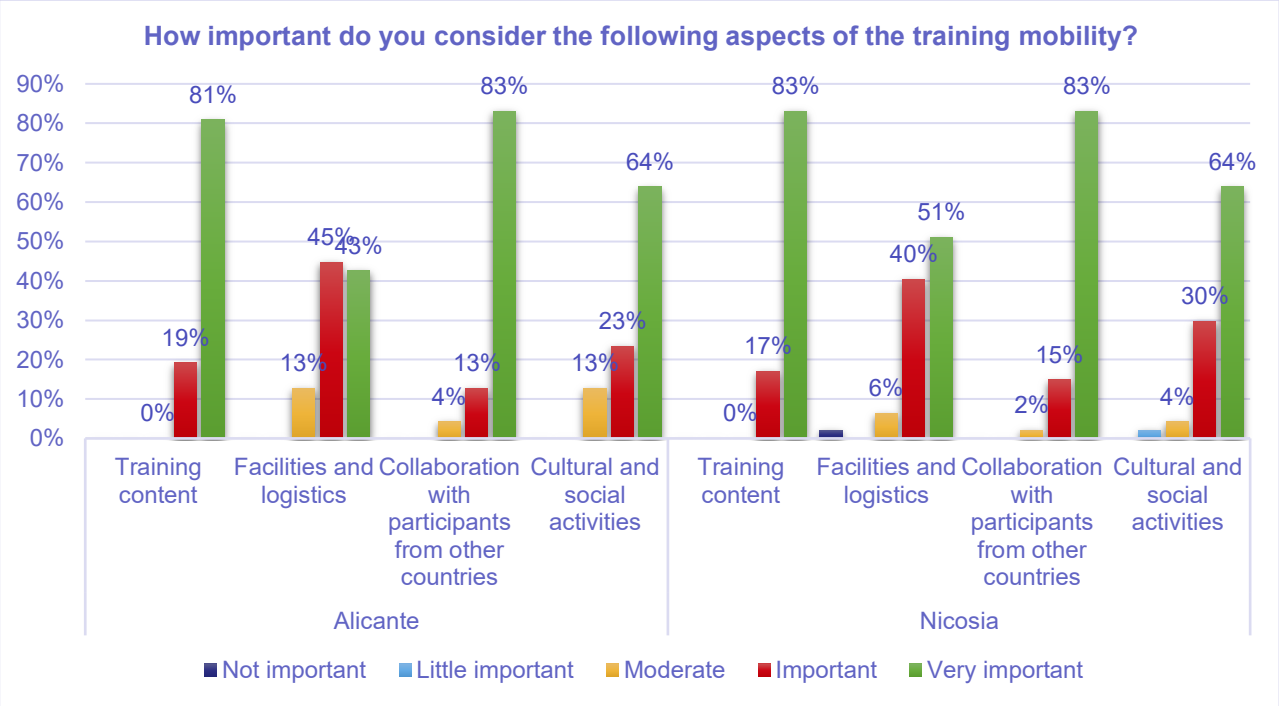


**Figure 29. Evaluation of the training mobility experience before the program**

## 5.3 Assessment results after the mobility program

The vast majority of participants rated their overall experience as excellent (82% in Alicante and 78% in Nicosia), with the remainder choosing very good or neutral (Figure 30). Training facilities were also well received, with 82% in Alicante and 58% in Nicosia rating them as excellent, although Nicosia showed a slightly wider range of responses, including very good and neutral. The sessions were considered highly effective in providing knowledge and skills related to Inclusive STEAM Education, increasing participants' confidence in applying these concepts−71% in Alicante and 68% in Nicosia rated this aspect as excellent. Cultural and social activities were similarly well rated, with 76% of Alicante participants and 65% of those in Nicosia rating them as excellent.

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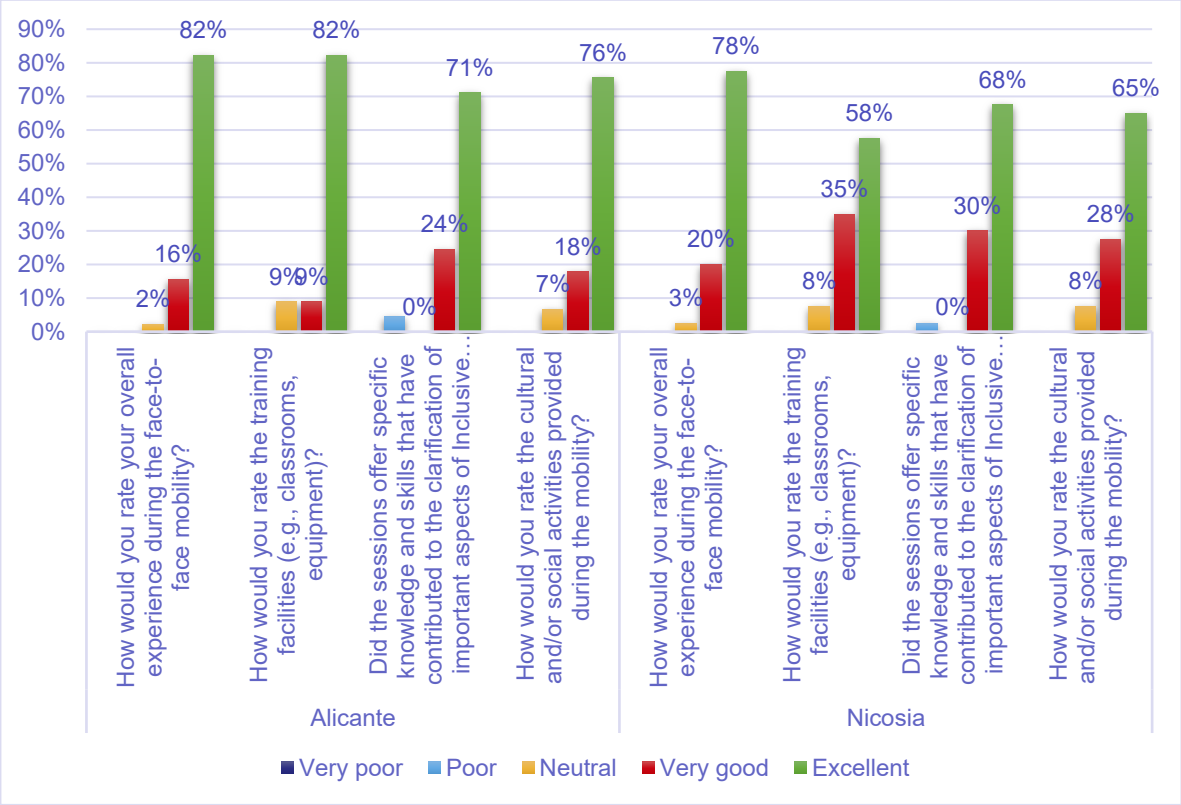


**Figure 30. Overall evaluation of the mobility training program**

In Alicante, 93% of participants reported that the in-person setting enhanced their ability to collaborate across countries compared to previous phases (MOOC and blended), while this percentage reached 100% in Nicosia. Furthermore, all participants from both locations (100%) stated that they would recommend the mobility experience to others (Figure 31).

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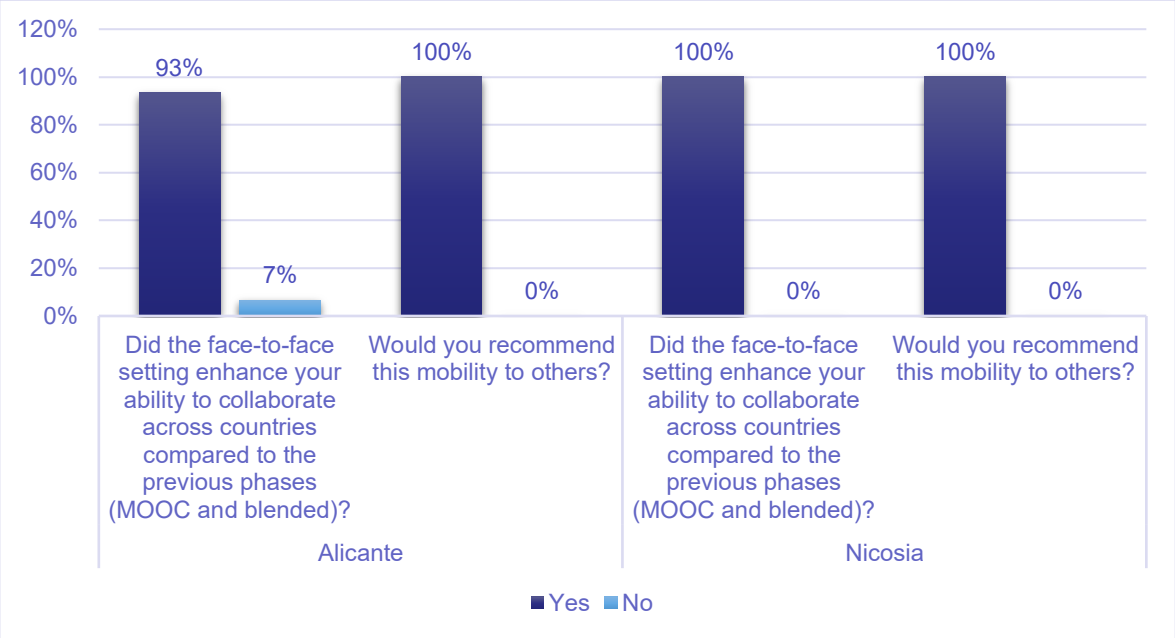


**Figure 31. Feedback on collaboration and recommendation of the mobility program**

Participants were asked to highlights several key areas that defined the participants' experience. International collaboration and peer exchange were consistently identified as the most valuable aspects. Many participants emphasized the benefit of working in diverse groups: *"Working in groups helped me to know better most of the participants,"* and *"The opportunity to exchange ideas with teachers from different countries gave me a new perspective on education."* These interactions were seen as enriching both professionally and personally, with several noting that *"meeting new colleagues with similar interests created opportunities for future collaboration."*

Hands-on and experiential learning was another central theme. Practical sessions like the *Egg Drop Challenge* were frequently mentioned, as participants appreciated the playful yet educational nature of the activity: *"I especially enjoyed the egg drop challenge, it helped us connect with the other participants and allowed us to bond even more by combining fun and teamwork."* Similarly, visits to local schools and real student engagement were described as highly impactful: *"Meeting the students and watching the way they worked was one of the best parts."* These experiences allowed participants to apply inclusive STEAM strategies in realistic settings and observe how they can be adapted across different contexts.

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Exposure to diverse pedagogical methods and systems was also noted. Educators valued learning from one another's national approaches: *"Understanding how the curriculum plays a vital role in other countries was eye-opening,"* and *"I learned about the Spanish curriculum and the way students presented their STEAM projects."* These insights broadened their professional understanding and encouraged reflection on their own systems and methods.

Additionally, participants appreciated the cultural and social dimension of the mobility. Activities such as city tours, traditional meals, and informal gatherings enhanced the experience: *"The warm hospitality, the well-organized trips, and the opportunity to immerse ourselves in Spanish culture made our trip unique and unforgettable."* This combination of professional training and cultural exchange created a holistic experience that many described as *"inspiring," "exciting," and "fruitful."*

Finally, several participants reflected on their personal and professional growth, reporting increased confidence and motivation to implement inclusive STEAM practices: *"This experience inspired me to innovate in my teaching approach,"* and *"I gained greater ease and confidence in my own skills to apply STEAM pedagogy in the classroom."*

While most participants described the SpicE mobility program as highly positive and rewarding, several challenges were identified, primarily relating to collaboration in multicultural and multidisciplinary teams. Some educators found it initially difficult to align perspectives and working styles due to the diversity in educational backgrounds, national systems, and teaching practices: *"Working in international teams required patience and flexibility due to different working habits and expectations,"* and *"Collaborating with participants from different countries highlighted the differences in educational systems, making it difficult to find common ground."* For some, adapting to team-based work with unfamiliar colleagues was unfamiliar: *"At first, it was challenging to work in a team with people we didn't know, but it became easier over time."*

Language and communication barriers were also mentioned as obstacles, particularly in expressing complex educational ideas in English: *"It was difficult for me to explain my ideas in a language that is not my own,"* and *"Balancing multiple languages and terminology was challenging."* Despite this, several participants viewed these

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difficulties as growth opportunities: *"This experience helped me gain more confidence in participating in international conversations."*

Another common theme was time-related pressure, especially regarding the pace and density of activities. Participants noted that *"keeping up with the fast-paced schedule and discussions required extra focus,"* and some felt that certain activities were *"condensed,"* leaving little time for deeper reflection or practice. A few specifically highlighted this during hands-on sessions with students: *"The time with the kids who acted as our teachers felt too short to fully explore the activity."*

Adapting to unfamiliar pedagogical tools or methods, such as differentiation strategies or inclusive STEAM design, also posed a challenge for some. For example, one educator shared: *"Applying some models for differentiation into practice was difficult,"* and another added, *"Shifting from theory to a hands-on STEAM approach was initially hard, but I adapted with support from colleagues."*

Despite these challenges, participants often described them as valuable and formative. Many stated that these experiences enhanced their resilience, adaptability, and intercultural competence: *"These difficulties quickly turned into valuable learning opportunities,"* and *"Collaborating across diverse backgrounds helped improve my teamwork and communication skills."*

Participants highlighted several training activities as particularly impactful and memorable for their future practice in Inclusive STEAM Education. A dominant theme was the hands-on, collaborative activities, such as the *Egg Drop Challenge*, frequently described as a meaningful example of inclusive design, problem-solving, and teamwork. As one educator put it, *"It helped us construct inclusive activities through engineering and science while maintaining a holistic STEAM approach."* This activity, often mentioned alongside the *River of Life* reflection and other physical group tasks, enabled participants to engage with both pedagogical theory and inclusive practice in a creative, experiential way.

Another major theme was the interaction with students, particularly the sessions where primary students acted as presenters or facilitators. Participants consistently referred to these moments as the most valuable, describing how they witnessed inclusion "in action." For example, one respondent noted: *"Meeting the children from the school in Alicante and seeing how they applied STEAM principles was the most inspiring part of the mobility."* Such activities provided concrete examples of student-

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led learning, differentiated instruction, and the successful integration of learners with diverse needs.

Participants also appreciated the lesson design workshops, particularly those focused on inclusive planning, case studies, and Universal Design for Learning (UDL). These sessions helped educators to reframe their teaching with a strong emphasis on accessibility. One teacher emphasized: *"The inclusive lesson planning workshop pushed me to think beyond delivery, considering engagement strategies for students with disabilities."*

Technology-enhanced activities also stood out. Tools like *Google Sites for WebQuest creation*, *Padlet portfolios*, and the integration of *assistive technologies* were mentioned as both innovative and practical. As one participant shared, *"Creating inclusive STEAM WebQuests helped me understand how digital tools can support engagement and differentiation."*

Finally, the multicultural teamwork experience itself was considered a valuable learning method. Through group work and exchanges of good practices, participants reported developing new strategies and gaining fresh perspectives, especially when co-creating STEAM activities with colleagues from diverse educational systems. This collaborative process was described as *"energizing, inspiring, and directly applicable to real classroom settings."*

Overall, most participants reported no major difficulties in cross-cultural communication during the mobility phase. Many highlighted the positive and open atmosphere, emphasizing mutual respect, collaboration, and shared goals as key enablers of effective communication. As one participant noted, *"Everyone was kind and eager to cooperate, which made it easy to connect."* Several also pointed out that previous familiarity with colleagues from earlier training phases helped reduce barriers.

Nonetheless, a small number of participants did mention challenges related to language proficiency, particularly for those less confident in English. These instances, however, were generally described as minor and manageable, often addressed through translation apps, peer support, or simplified language. Some participants reflected on how these moments of miscommunication became opportunities for creative problem-solving and growth in intercultural competence. Others noted that

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differences in communication styles or educational expectations occasionally caused misunderstandings, but these were resolved through openness and patience.

Overall, participants viewed the multicultural setting as enriching rather than limiting, noting that it deepened their appreciation of diverse educational approaches and cultural perspectives, and enhanced their ability to collaborate in international contexts. Even in cases where minor issues arose, these were not seen as obstacles but rather as part of the learning journey.

Finally, participants described what they gained during the face-to-face that they did not acquire in the earlier phases. Participants highlighted that the face-to-face phase provided significant added value compared to the earlier online components of the training. While the previous phases offered strong theoretical foundations, the in-person experience allowed them to apply knowledge in real-world contexts, gain hands-on practice, and develop practical strategies for inclusive STEAM education. Many emphasized acquiring skills in designing and implementing inclusive lesson plans, adapting activities for diverse learners, and using tools like Scratch, WebQuests, mind maps, and concept cartoons.

A key learning aspect was the enhanced collaboration and teamwork through direct interaction, which fostered professional networking and the exchange of ideas across cultural and educational contexts. Several participants mentioned that they strengthened their interpersonal and intercultural communication skills, gained confidence in group facilitation, and learned how to navigate real-time problem-solving and flexible adaptation.

Others referred to improved creativity, planning, and leadership competences, insights into assistive technologies and universal design principles, as well as a deeper appreciation of cultural differences in educational approaches. A common reflection was that the face-to-face setting made learning more memorable, motivating, and applicable, while also reinforcing the importance of inclusive values, learner engagement, and collaboration in STEAM environments.

## 5.4 Tutors' feedback

Following the completion of the training mobility phase, the tutors who facilitated and supported the activities were invited to share their reflections and experiences. A total

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of eleven tutors participated across the two mobility programs, representing the four academic partners: the University of Cyprus (UCY), the University of Alicante (UA), the University of Macedonia (UOM), and Trakia University. Their insights provide a valuable perspective on the implementation of the program, the engagement and collaboration among participants, and the added value of face-to-face, cross-cultural learning environments. The feedback collected highlights both the impact of the training on participants and the professional enrichment experienced by the tutors themselves.

Tutors described the face-to-face mobility phase as a professionally and personally enriching experience that significantly enhanced participant engagement, cross-cultural interaction, and collaborative learning. Most tutors reported **no major challenges**, highlighting the smooth organisation, strong collaboration between universities, and high motivation of the participants. Minor difficulties, such as differences in prior knowledge, English proficiency, and varying teaching styles, were generally framed as learning opportunities rather than obstacles.

Key strengths observed included:

- **Intercultural collaboration:** Tutors consistently noted the positive interaction among participants from different countries, describing the learning environment as dynamic, open, and inclusive. The ease of communication (rated 4–5 on a 5-point scale) and adaptability to diverse viewpoints were praised across responses.
- **Community building:** Most of the tutors emphasized that the in-person format facilitated spontaneous dialogue, mutual support, and deepened relationships, which had been harder to achieve in the online phases. Participants were more relaxed, willing to engage in group discussions, and better able to build a shared understanding of inclusive STEAM education.
- **Knowledge application and co-construction:** The hands-on format enabled participants to apply theoretical knowledge to real-world scenarios. Tutors observed that the face-to-face sessions promoted collaborative problem-solving, richer discussions, and peer learning, with participants exchanging practices and adapting ideas to their local contexts.

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- **Participant engagement:** All tutors noted high levels of engagement during group activities. Participants demonstrated openness, curiosity, and a sense of ownership, especially in co-designed activities. Several tutors remarked that learners were more confident and proactive compared to the online phases.
- **Impact on professional development:** The mobility allowed for authentic cultural exchange, leading to increased intercultural competence, network building, and the European dimension of teacher development. Tutors appreciated the professional networks emerging from the experience and stressed the importance of maintaining and growing these communities.

Tutors also provided suggestions for improvements for future mobility, including:

- Include more structured time for group reflection and discussion after activities.
- Consider formally involving local teachers in future mobility editions to enrich exchange and connect with host country contexts.
- Personalise learning further by offering optional sessions based on participants' interests.
- Explore ways to sustain the community of practice created through the mobilities.

In summary, tutors agreed that the face-to-face phase was the most impactful part of the SpicE training. It not only consolidated learning from the previous phases but also strengthened collaboration, creativity, and a shared commitment to inclusive STEAM education across borders.

# 6. National assessment results

This section presents the evaluation of certain aspects of the MOOC and the blended course at the country level, specifically for the four participating countries (Greece, Cyprus, Spain, and Bulgaria).

## 6.1 National demographics of MOOC and Blended course

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Table 5 presents the number of participants who started and completed the MOOC and the blended course by country.

| | Pre-MOOC participants | Post-MOOC participants | Pre-blended participants | Post-blended participants |
|---|---|---|---|---|
| **Greece** | 534 | 346 | 86 | 49 |
| **Cyprus** | 56 | 24 | 16 | 11 |
| **Spain** | 184 | 90 | 14 | 13 |
| **Bulgaria** | 134 | 80 | 21 | 14 |

**Table 5. Participation in MOOC and Blended course by country**

Demographic characteristics by country (Figures 32 and 33) were collected before and after the MOOC:

- Greece remained the largest group, with stable gender and age distributions (82% female; most aged 35-54). The representation of primary teachers increased slightly (34% to 39%). Experience levels showed little change, with most reporting 2–10 years in special education.
- Cyprus had an increase in female participation (88% to 92%) and a shift towards older age groups. The percentage of participants with over 20 years in general education increased (42% to 53%), while most maintained 2-10 years in special education.
- Spain had stable demographics, with a small increase in pre-school teachers (34% to 46%) and stable experience levels. Most had 2-10 years of experience in special education.
- Bulgaria remained female-dominated (93% to 94%) and showed a small shift toward more experienced teachers in general education (particularly in the 20–30 year range). Special education experience remained largely unchanged.

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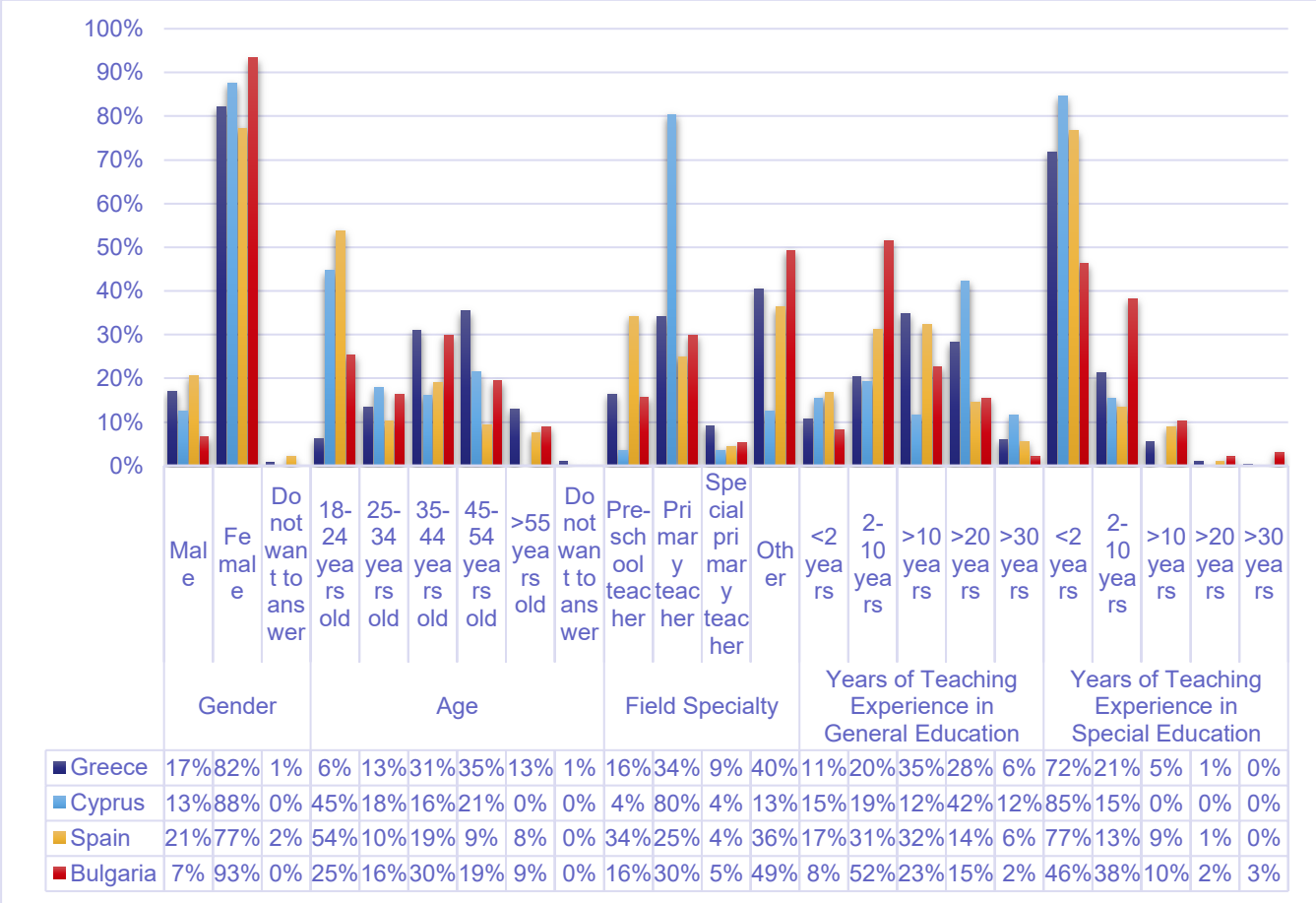


| | Male | Female | Do not want to answer | 18-24 years old | 25-34 years old | 35-44 years old | 45-54 years old | >55 years old | Do not want to answer | Pre-school teacher | Primary teacher | Special primary teacher | Other | <2 years | 2-10 years | >10 years | >20 years | >30 years | <2 years | 2-10 years | >10 years | >20 years | >30 years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Greece | 17% | 82% | 1% | 6% | 13% | 31% | 35% | 13% | 1% | 16% | 34% | 9% | 40% | 11% | 20% | 35% | 28% | 6% | 72% | 21% | 5% | 1% | 0% |
| Cyprus | 13% | 88% | 0% | 45% | 18% | 16% | 21% | 0% | 0% | 4% | 80% | 4% | 13% | 15% | 19% | 12% | 42% | 12% | 85% | 15% | 0% | 0% | 0% |
| Spain | 21% | 77% | 2% | 54% | 10% | 19% | 9% | 8% | 0% | 34% | 25% | 4% | 36% | 17% | 31% | 32% | 14% | 6% | 77% | 13% | 9% | 1% | 0% |
| Bulgaria | 7% | 93% | 0% | 25% | 16% | 30% | 19% | 9% | 0% | 16% | 30% | 5% | 49% | 8% | 52% | 23% | 15% | 2% | 46% | 38% | 10% | 2% | 3% |

**Figure 32. Demographics of pre-MOOC survey by country**

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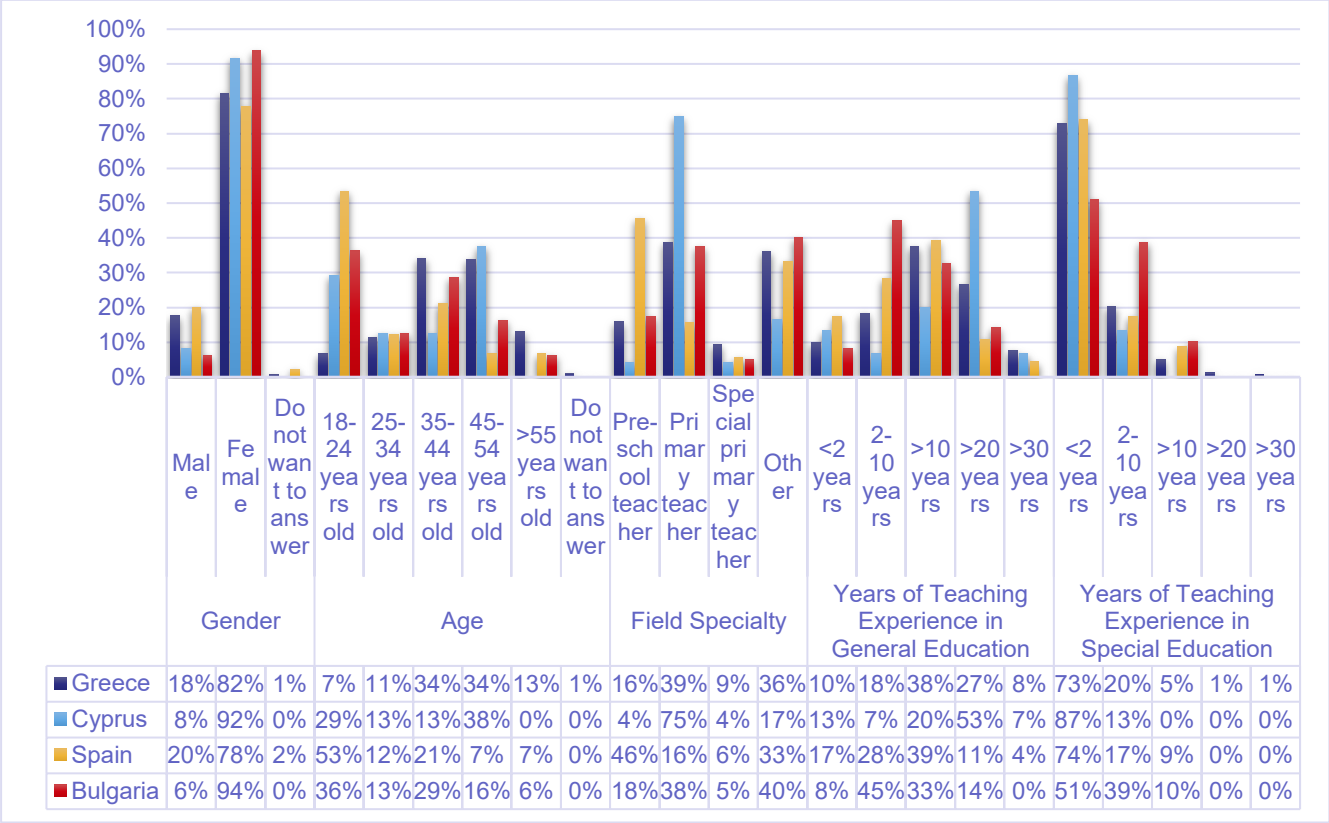


| | Gender | | | Age | | | | | | Field Specialty | | | | Years of Teaching Experience in General Education | | | | | Years of Teaching Experience in Special Education | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Do not want to answer | 18-24 years old | 25-34 years old | 35-44 years old | 45-54 years old | >55 years old | Do not want to answer | Pre-school teacher | Primary teacher | Special primary teacher | Other | <2 years | 2-10 years | >10 years | >20 years | >30 years | <2 years | 2-10 years | >10 years | >20 years | >30 years |
| Greece | 18% | 82% | 1% | 7% | 11% | 34% | 34% | 13% | 1% | 16% | 39% | 9% | 36% | 10% | 18% | 38% | 27% | 8% | 73% | 20% | 5% | 1% | 1% |
| Cyprus | 8% | 92% | 0% | 29% | 13% | 13% | 38% | 0% | 0% | 4% | 75% | 4% | 17% | 13% | 7% | 20% | 53% | 7% | 87% | 13% | 0% | 0% | 0% |
| Spain | 20% | 78% | 2% | 53% | 12% | 21% | 7% | 7% | 0% | 46% | 16% | 6% | 33% | 17% | 28% | 39% | 11% | 4% | 74% | 17% | 9% | 0% | 0% |
| Bulgaria | 6% | 94% | 0% | 36% | 13% | 29% | 16% | 6% | 0% | 18% | 38% | 5% | 40% | 8% | 45% | 33% | 14% | 0% | 51% | 39% | 10% | 0% | 0% |

**Figure 33. Demographics of post-MOOC survey by country**

Demographic characteristics were also collected by country before and after the blended course (Figures 34 and 35):

- Greece maintained a consistent profile, with in-service teachers comprising 84% of respondents and female participants showing a small increase (from 74% to 78%). The 35-44 age group remained the largest. The distribution of field specialties and experience was stable, with a moderate increase in primary teachers (from 28% to 29%). Most had 2-10 years of special education experience both before and after the course.
- Cyprus recorded 100% in-service and female participation post-course. The age distribution shifted towards older age groups, particularly 45–54 (from 56% to 64%). Primary teachers remained the majority, with little change in experience levels. The proportion of participants with 2–10 years of special education experience remained high (88% pre-course, 82% post-course).
- Spain had only in-service teachers, with gender and age distributions largely consistent. The 35-44 age group remained the largest (46% post-course).

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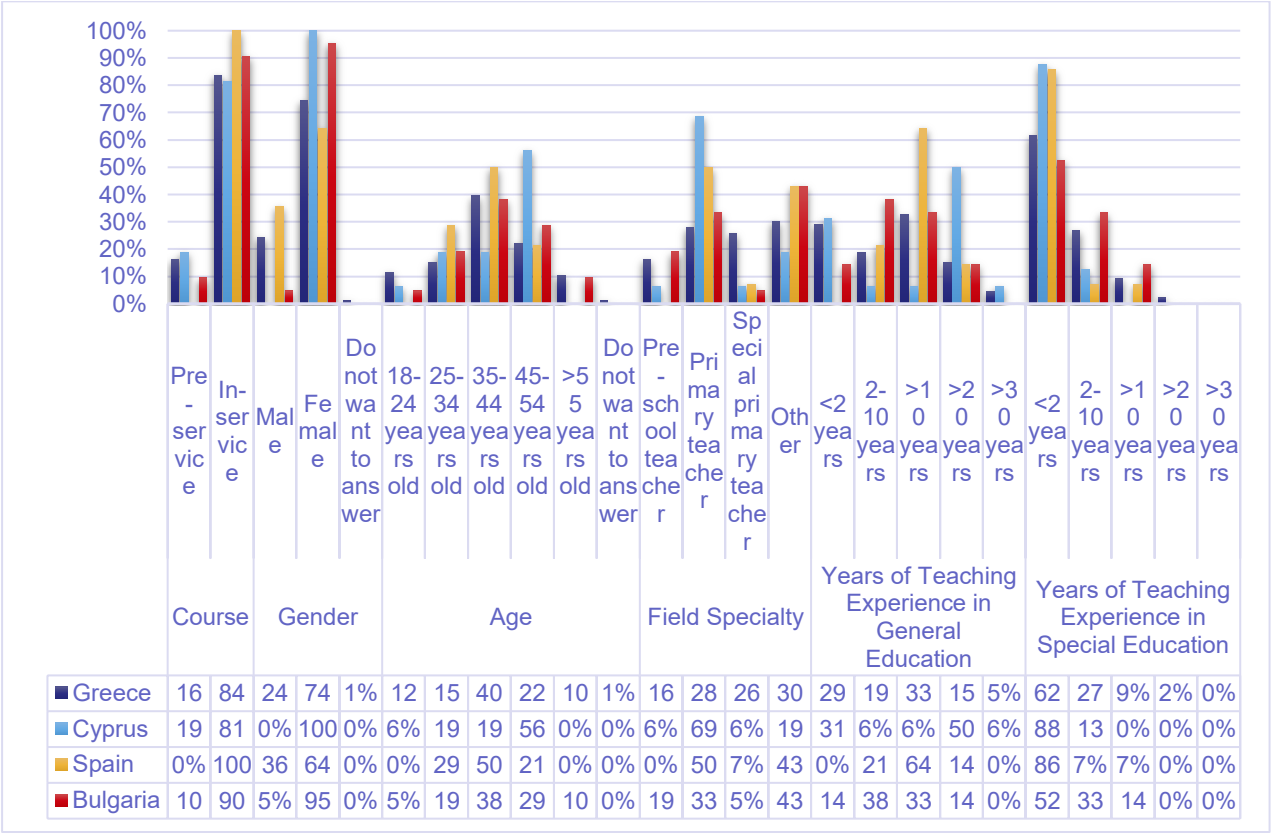
Primary teachers increased from 50% to 54%, and more participants reported greater experience in both general and special education post-course, particularly in the 20 plus year range.

- Bulgaria continued to have a high female and in-service presence (93% and 100%, respectively, post-course). Age and experience distributions shifted slightly towards older and more experienced participants. General education experience was more concentrated in the 10-20 year range, and special education experience showed a notable increase in the 10-20 year range (from 33% to 57%).




| | Pre-service | In-service | Male | Female | Do not want to answer | 18-24 years old | 25-34 years old | 35-44 years old | 45-54 years old | >55 years old | Do not want to answer | Pre-school teacher | Primary teacher | Special primary teacher | Other | <2 years | 2-10 years | >10 years | >20 years | >30 years | <2 years | 2-10 years | >10 years | >20 years | >30 years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Course | | Gender | | | Age | | | | | | Field Specialty | | | | Years of Teaching Experience in General Education | | | | | Years of Teaching Experience in Special Education | | | | |
| Greece | 16 | 84 | 24 | 74 | 1% | 12 | 15 | 40 | 22 | 10 | 1% | 16 | 28 | 26 | 30 | 29 | 19 | 33 | 15 | 5% | 62 | 27 | 9% | 2% | 0% |
| Cyprus | 19 | 81 | 0% | 100 | 0% | 6% | 19 | 19 | 56 | 0% | 0% | 6% | 69 | 6% | 19 | 31 | 6% | 6% | 50 | 6% | 88 | 13 | 0% | 0% | 0% |
| Spain | 0% | 100 | 36 | 64 | 0% | 0% | 29 | 50 | 21 | 0% | 0% | 0% | 50 | 7% | 43 | 0% | 21 | 64 | 14 | 0% | 86 | 7% | 7% | 0% | 0% |
| Bulgaria | 10 | 90 | 5% | 95 | 0% | 5% | 19 | 38 | 29 | 10 | 0% | 19 | 33 | 5% | 43 | 14 | 38 | 33 | 14 | 0% | 52 | 33 | 14 | 0% | 0% |

**Figure 34. Demographics of pre-blended survey by country**

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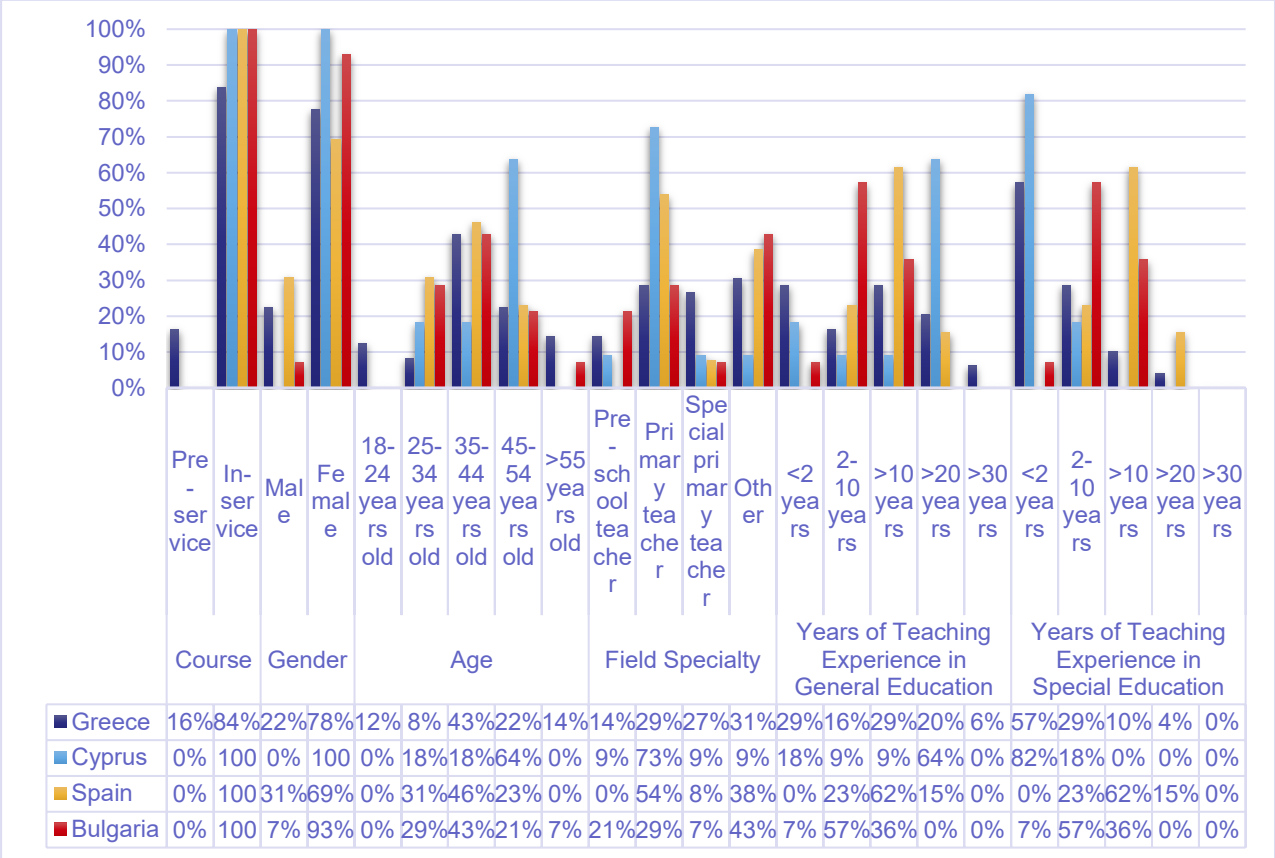


| | Pre-service | In-service | Male | Female | 18-24 years old | 25-34 years old | 35-44 years old | 45-54 years old | >55 years old | Pre-school teacher | Primary teacher | Special primary teacher | Other | <2 years | 2-10 years | >10 years | >20 years | >30 years | <2 years | 2-10 years | >10 years | >20 years | >30 years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Greece | 16% | 84% | 22% | 78% | 12% | 8% | 43% | 22% | 14% | 14% | 29% | 27% | 31% | 29% | 16% | 29% | 20% | 6% | 57% | 29% | 10% | 4% | 0% |
| Cyprus | 0% | 100 | 0% | 100 | 0% | 18% | 18% | 64% | 0% | 9% | 73% | 9% | 9% | 18% | 9% | 9% | 64% | 0% | 82% | 18% | 0% | 0% | 0% |
| Spain | 0% | 100 | 31% | 69% | 0% | 31% | 46% | 23% | 0% | 0% | 54% | 8% | 38% | 0% | 23% | 62% | 15% | 0% | 0% | 23% | 62% | 15% | 0% |
| Bulgaria | 0% | 100 | 7% | 93% | 0% | 29% | 43% | 21% | 7% | 21% | 29% | 7% | 43% | 7% | 57% | 36% | 0% | 0% | 7% | 57% | 36% | 0% | 0% |

**Figure 35. Demographics of post-blended survey by country**

## 6.2 National MOOC assessment results

Participants' expectations from the MOOC (Figure 36) varied slightly across countries before the course, but several common trends emerged:

- Greece: Participants showed strong interest in acquiring new knowledge and skills in Inclusive STEAM Education, with over 85% expressing that they were "interested" or "extremely interested." Access to resources and applying learning to their jobs were top priorities (85% and 85%, respectively). Certification and job development were less important, with only around 40% highly interested in these aspects.
- Cyprus: Respondents focused more on practical outcomes−applying what they learned (79%) and improving their current roles (59%). While acquiring skills and knowledge was important (around 83%), interest in certification and competitive advantage was more moderate (just over 50%).

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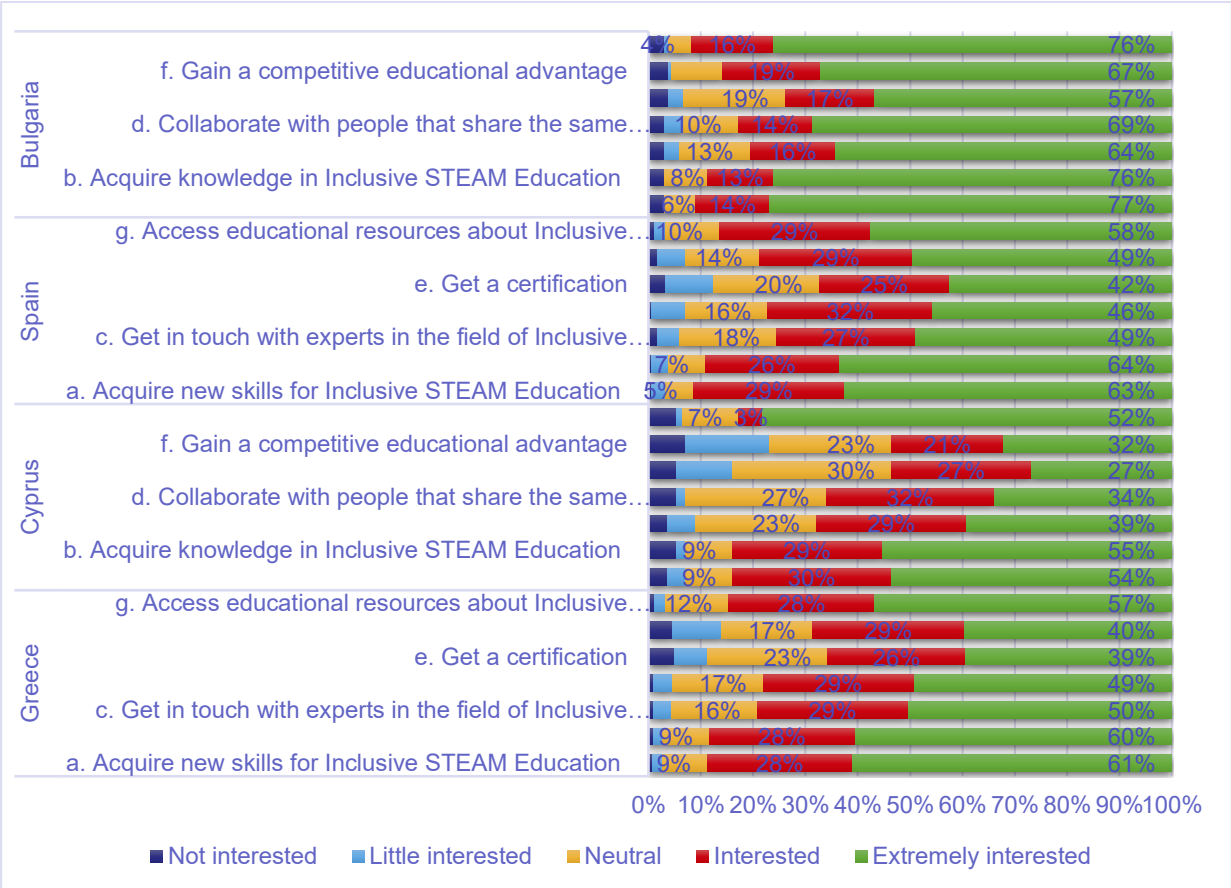
- Spain: Participants were highly motivated by professional development, particularly acquiring new skills (92%) and accessing resources (87%). The desire to apply learning (90%) and improve their current job (78%) ranked high, while fewer saw the MOOC as a path to a new job or certification.
- Bulgaria: Respondents demonstrated the strongest enthusiasm overall, with very high interest in acquiring skills (91%), accessing resources (92%), and applying knowledge in practice (93%). The majority (over 65%) also expressed a desire to influence their work environment and expand their professional network.

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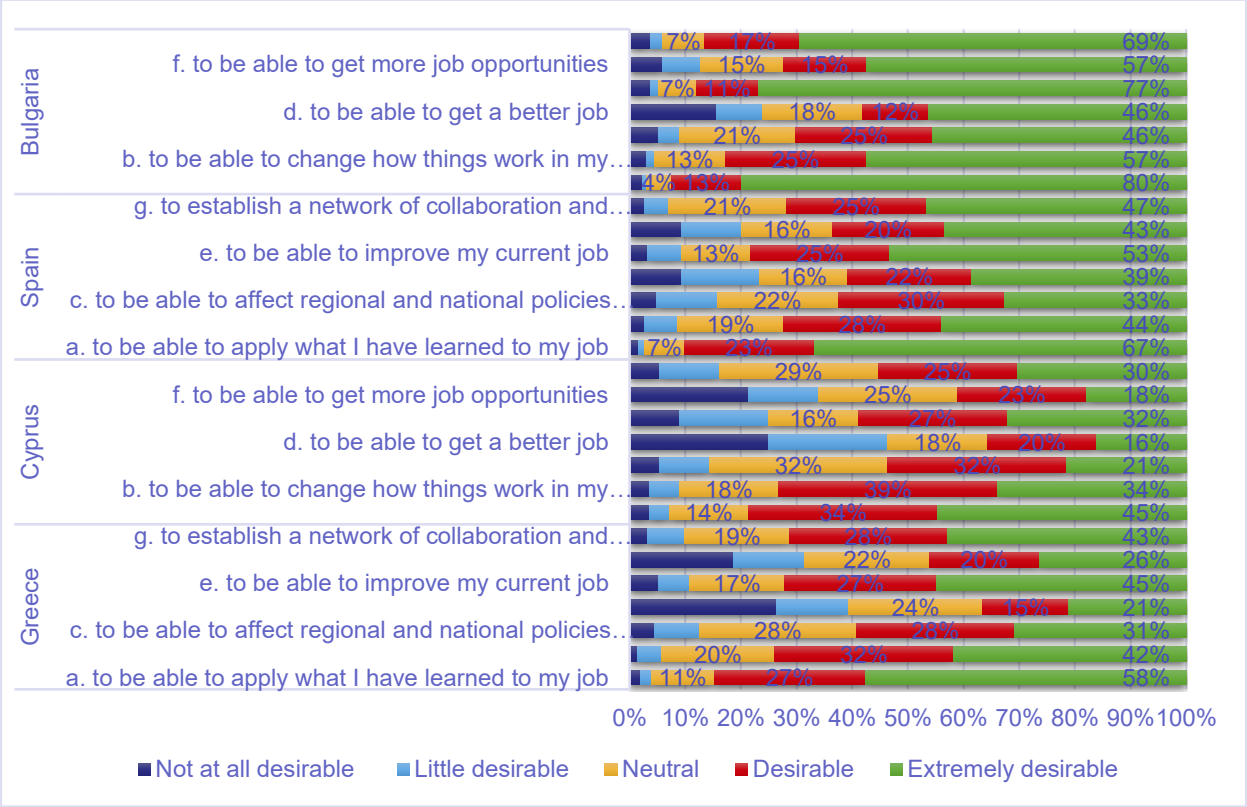


**Figure 36. Expectations from the MOOC according to the pre-MOOC survey by country**

Figure 37 depicts participants' perspectives on the benefits gained from the MOOC in the four countries. Overall, respondents in all countries reported highly positive outcomes, particularly in terms of acquiring new skills and knowledge, accessing educational resources and obtaining certification, with strong agreement levels mainly ranging between 80% and 90%. Greek participants showed a strong appreciation for new knowledge, skills and resources, while respondents from Cyprus also valued them, but with slightly more varied responses regarding expert interaction and collaboration. Spanish participants stood out for their strong endorsement of certification and peer collaboration and Bulgarian participants highlighted the value of educational resources and the competitive advantage gained through the MOOC. Interaction with experts and opportunities for collaboration were positively rated across all countries, although with some differences in intensity.

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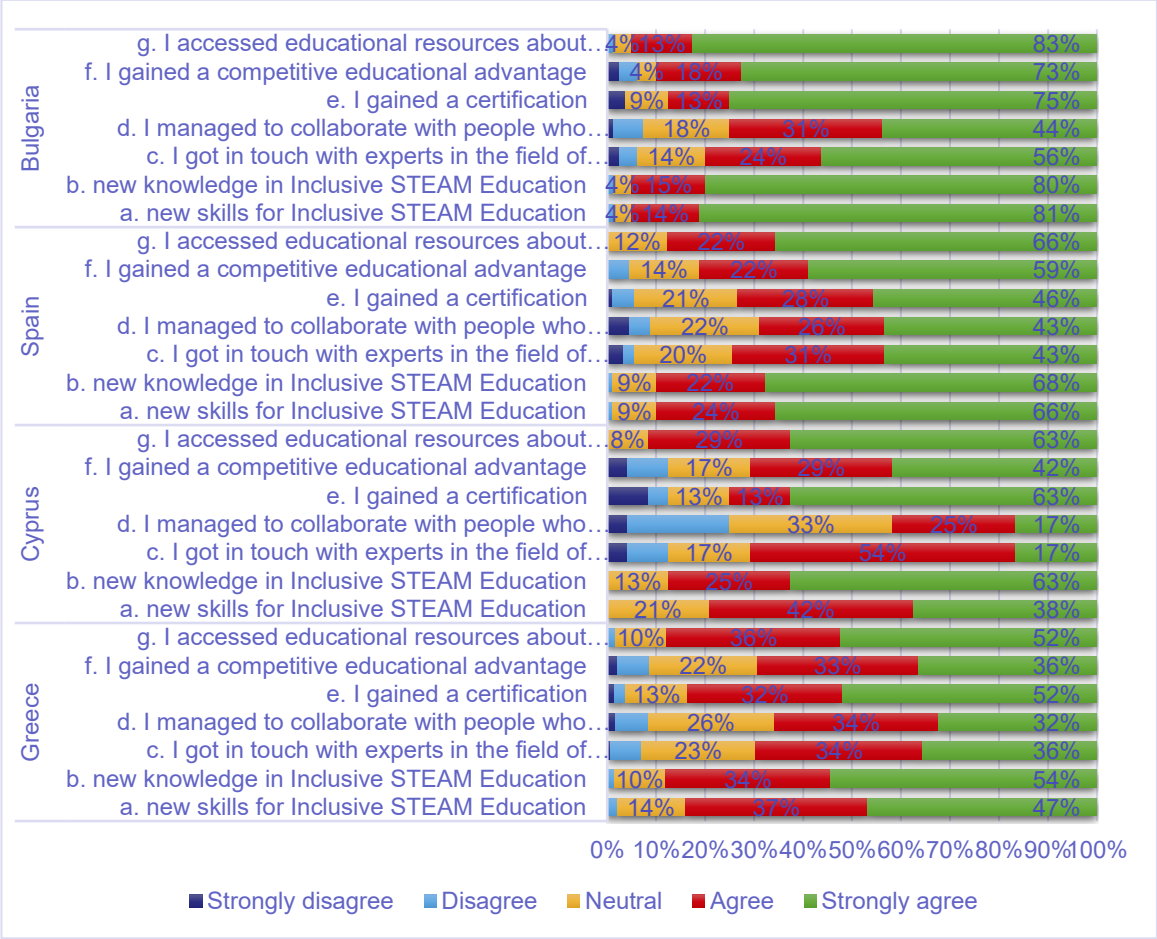


**Figure 37. Benefits of the MOOC according to the post-MOOC survey by country**

Figure 38 shows that in Greece, a strong majority (79%) felt confident that they could apply what they learned in their job, with 72% agreeing or strongly agreeing they could improve their current role. Around 65% expected that they could influence organizational change, while only 22% felt able of influence regional or national policies. Expectations for better jobs or more opportunities were moderate, with around 59% being positive. In Cyprus, confidence in applying knowledge at job was even higher at 91% and 68% believed they could improve their current job. However, fewer felt empowered to change organizational practices (46%) or influence policy (21%). Aspirations for better jobs or more opportunities were somewhat lower, with around 29% strongly agreeing. For Spain, 84% agree or strongly agree they could apply the earning to their jobs and 60% believed they could improve their roles. The ability to influence policy was higher at 34%, but changing organizational processes was less certain (33%). Around 40% expected better job prospects or more opportunities. Finally, Bulgarian participants showed

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the highest confidence in applying knowledge (97%) and improving their current job (81%). The majority (74%) felt they could influence organizational change and a significant 77% believed they could affect regional or national policies. Expectations to secure better jobs or more opportunities were also strong, with over 87% being positive.

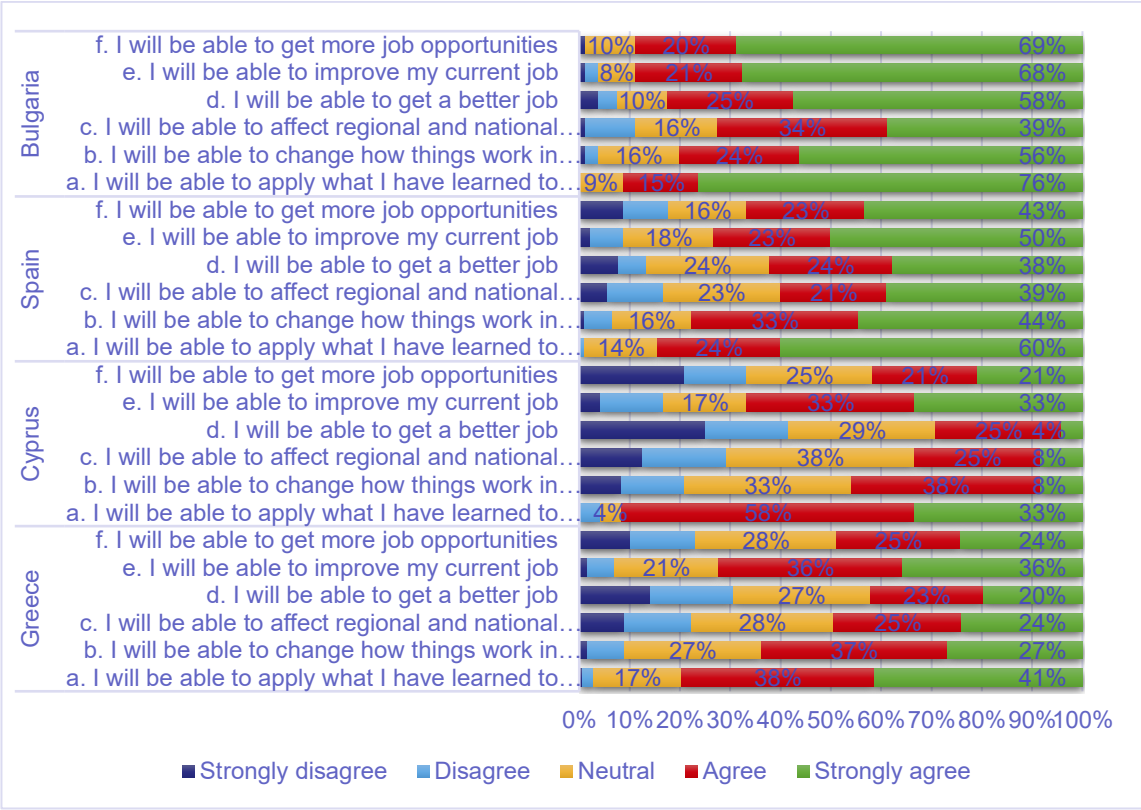


**Figure 38. Impact of the MOOC according to the post-MOOC survey by country**

Figure 39 shows consistently positive evaluations of the MOOC across all countries, with some national differences. In Greece, over 85% agreed or strongly agreed that the MOOC was well-designed, useful, and supported their learning, with 71% also valuing community engagement. Cyprus showed slightly lower results, with around 80–85% positive responses on most aspects, although community engagement was lower at 62%. In Spain, approval ranged between 85–90% for design, learning and usefulness, with 74% highlighting community building. Bulgaria stood out with the strongest overall satisfaction−over 90% across all aspects and 90% positive on community engagement.

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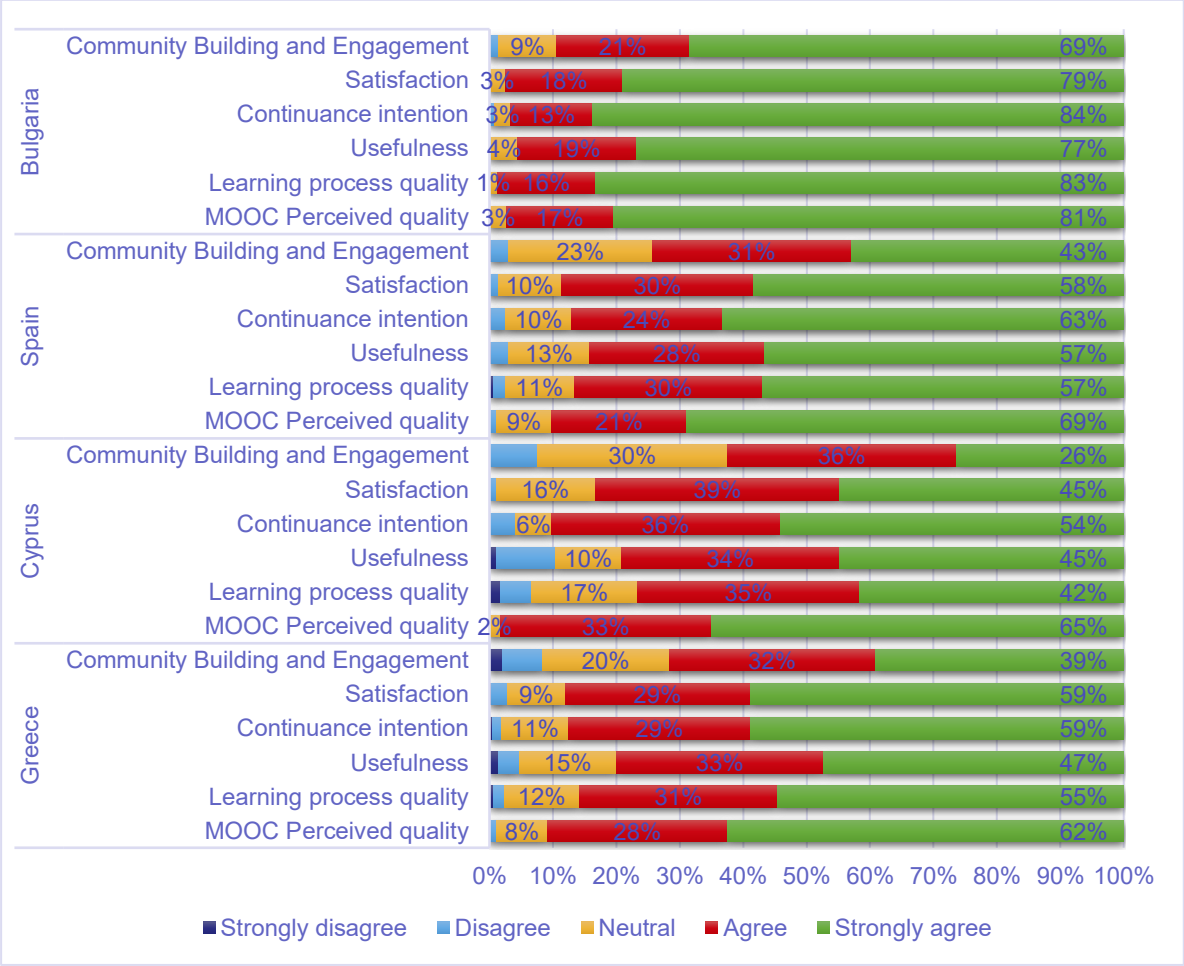


**Figure 39. Evaluation of MOOC learning experience by country**

## 6.3 National Blended course assessment results

Participants' expectations of the blended course (Figure 40) varied across countries, but several common priorities emerged:

- Greece: Respondents were primarily interested in acquiring new skills and knowledge in Inclusive STEAM Education, with over 85% stating they were "interested" or "extremely interested." Applying learning to their jobs (90%) and improving their current role (76%) were key goals. Certification and job-related motivation were less significant, with only 54% showing strong interest in getting a better job.
- Cyprus: Participants had the strongest focus on gaining practical knowledge and collaboration, with nearly 90% "extremely interested" in acquiring new skills and accessing resources. Interest in influencing policy or changing

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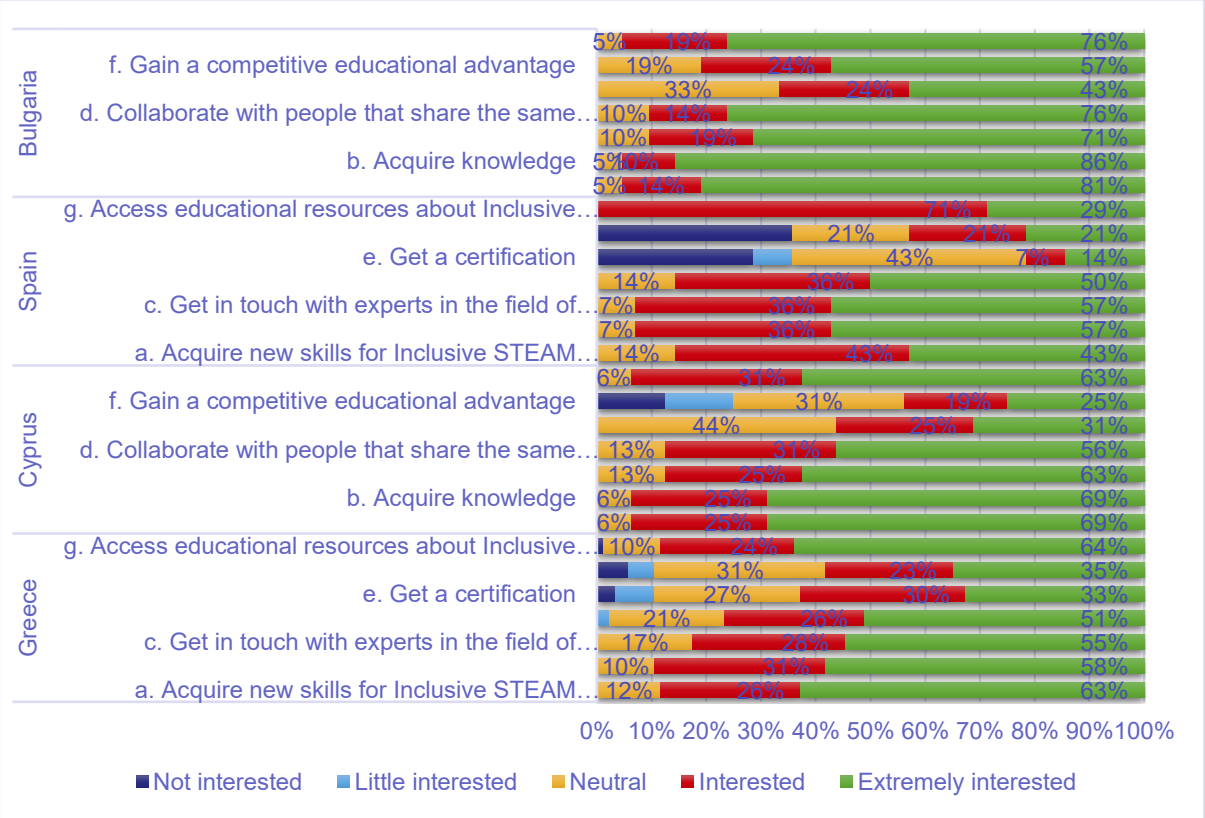
organizational practices was low, while improving their current job (81%) and applying what they learned (87%) were top objectives. Job search and certification were not major motivators.

- Spain: Interest was more balanced, with moderate to high enthusiasm for learning new skills (44% “extremely interested”), collaboration and improving teaching practice. Applying learning (57%) and improving their job (71%) were the main expectations, while expectations for gaining better job opportunities or influencing policy were generally low.
- Bulgaria: Respondents showed high levels of enthusiasm for almost all aspects, especially for applying learning (95%) and improving their current job (81%). Over 80% stated they were “interested” or “extremely interested” in acquiring knowledge and connecting with experts.

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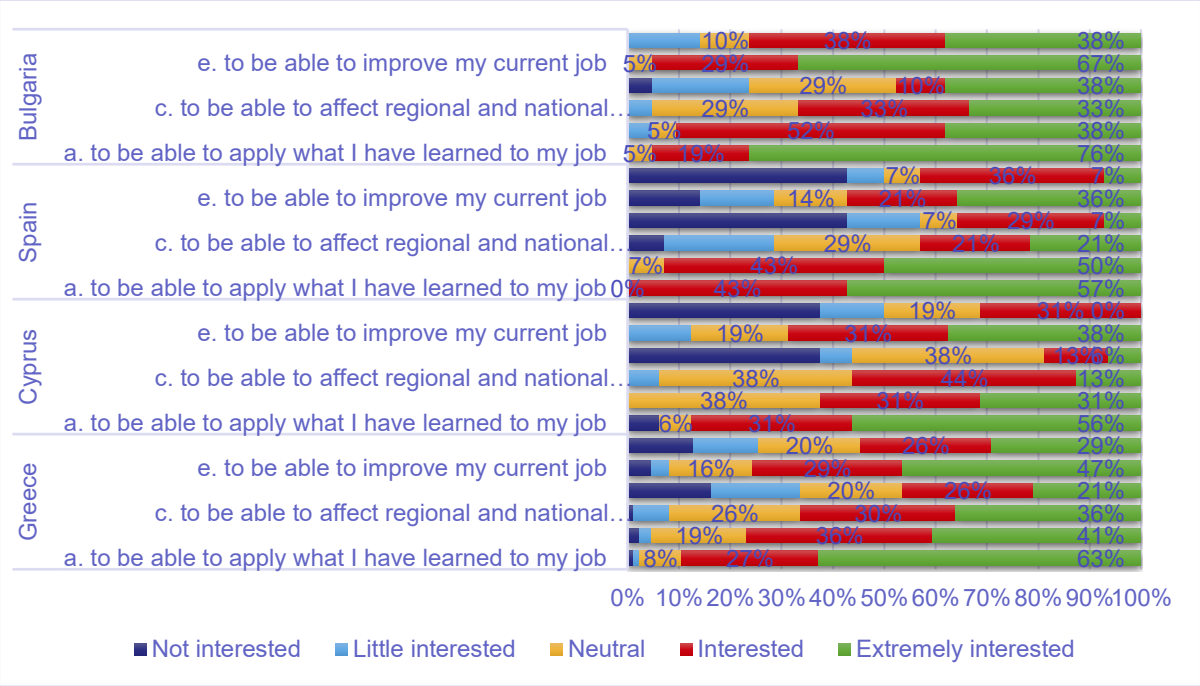


**Figure 40. Expectations from the blended course according to the pre-blended survey by country**

Figure 41 shows the benefits of the blended course for participants in Greece, Cyprus, Spain and Bulgaria. Most respondents strongly agreed or agreed that they had acquired new skills (ranging from 69% in Spain to 92% in Greece) and new knowledge (59% in Spain to 96% in Greece). Access to educational resources was highly valued in all countries, with strong agreement ranging from 55% in Cyprus to 79% in Bulgaria. Certification was also appreciated, especially in Greece (78%) and Bulgaria (79%). Collaboration with peers and contact with experts received positive but more varied responses, with Bulgaria showing the highest strong agreement (64%-71%) compared to lower rates in Cyprus and Spain.

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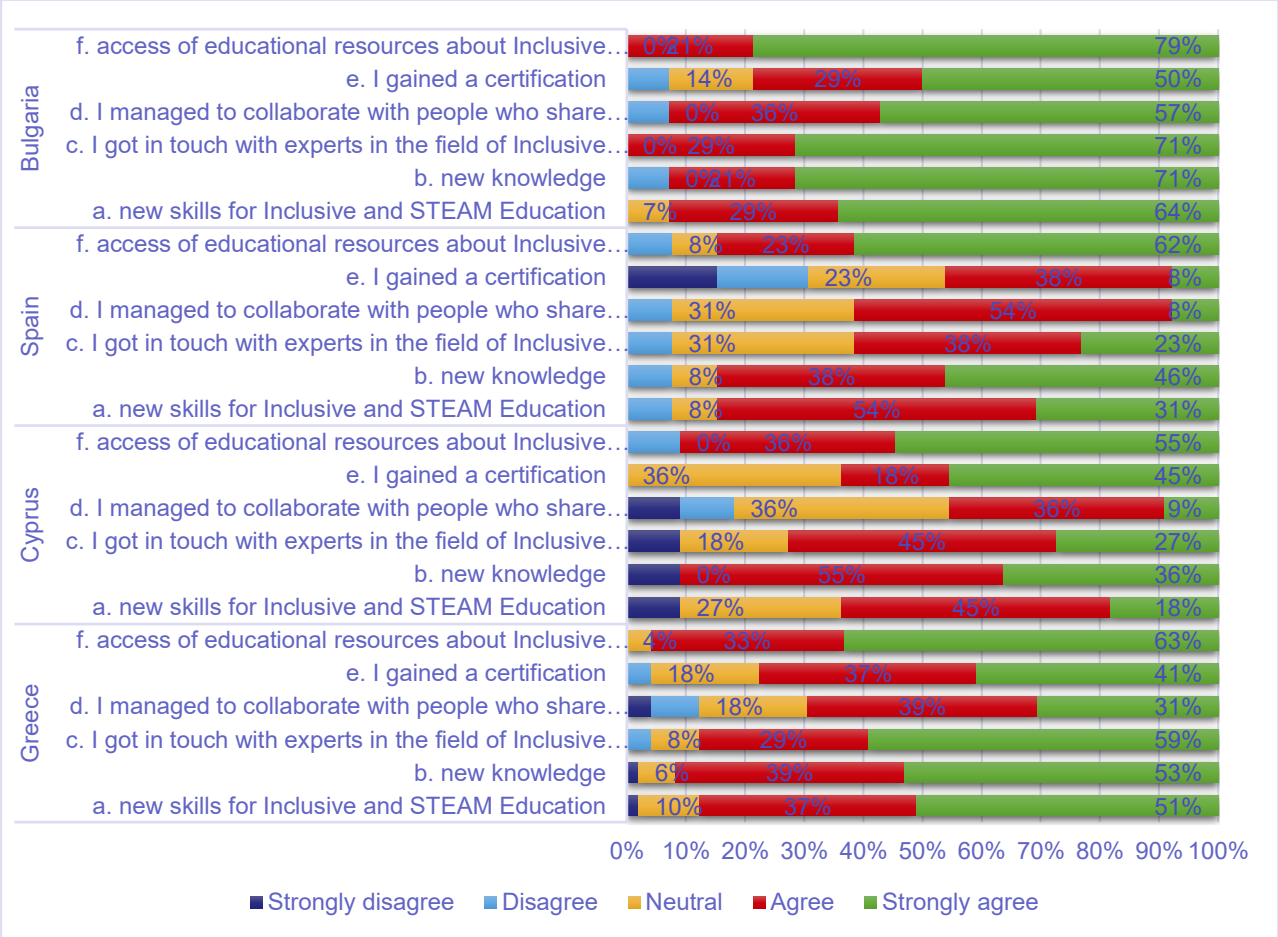


**Figure 41. Benefits of the blended course according to the post-blended survey by country**

As shown in Figure 42, most Greek participants (81%) felt confident applying what they learned and 76% expected improvements in their current job. Some 59% believed they could influence their organization, but fewer (46%) felt they could impact policy or get better job opportunities. In Cyprus, responses were more cautious. While 63% believed they could apply knowledge, expectations for organizational impact, job improvement or policy influence were much lower (below 30% in most cases), with high rates of neutrality and disagreement. 84% of Spanish respondents agreed or strongly agreed they could apply their learning and 92% expected job improvement. They also showed the highest confidence they could influence their organization (85%) and gain better job prospects (69%). In Bulgaria, confidence was high in practical application (86%) and job improvement (72%). However, expectations to influence policy or secure better jobs were more moderate (57-64%), reflecting a cautious but positive outcome.

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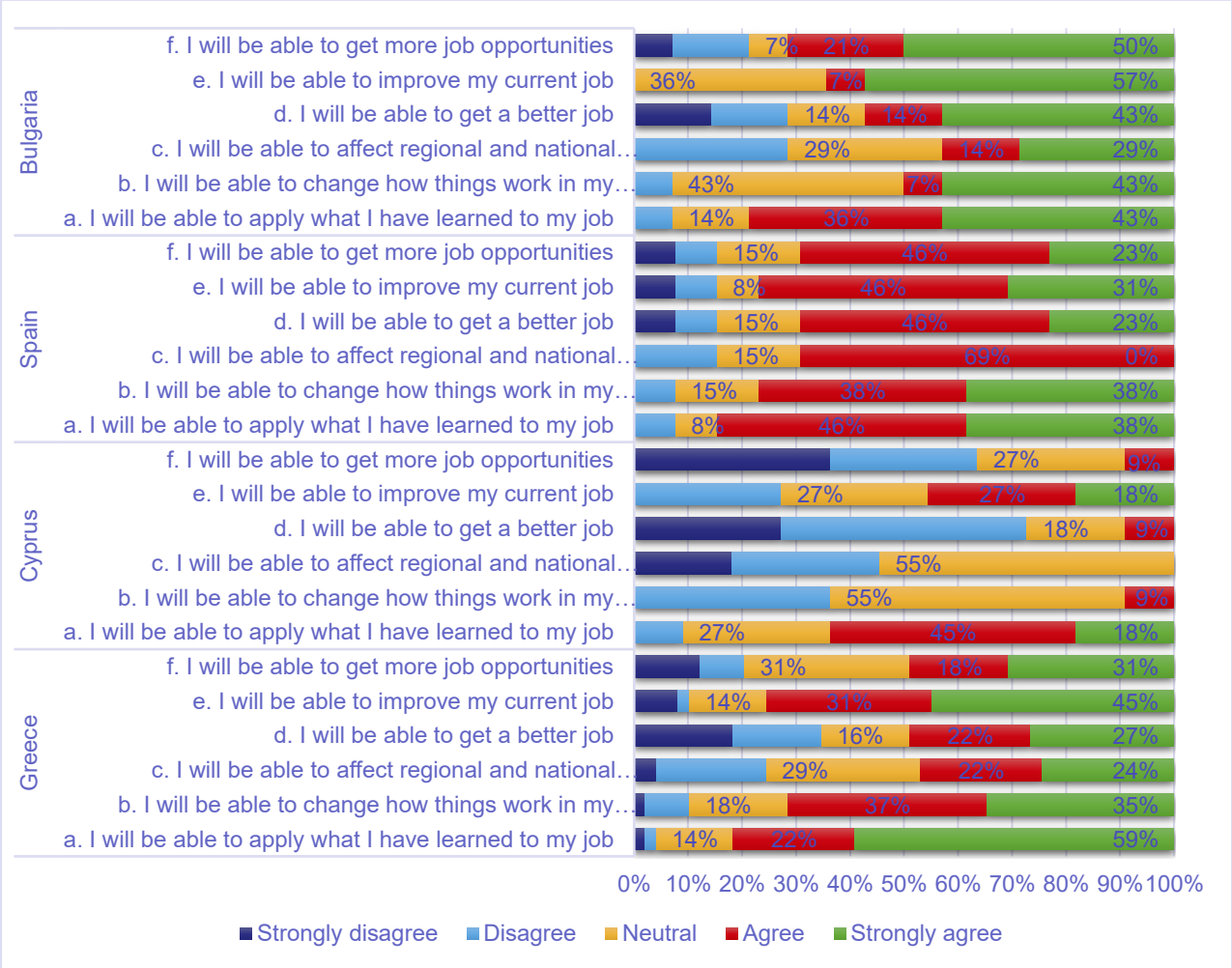


**Figure 42. Impact of the blended course according to the post-blended survey by country**

Finally, Figure 43 illustrates participants' evaluations of the blended course across countries. In Greece, ratings were very strong, with 94% considering the course content to be either very good or excellent and 90% saying the same for the online sessions. Peer and instructor interactions were also well rated, with 72% and 84% respectively. In Cyprus, responses were more mixed: 91% rated the content positively, but peer interaction received lower ratings, with only 27% choosing excellent. Spain showed moderate satisfaction, most aspects had around 70–80% positive ratings, although excellent quality ratings were lower, and the quality of the online sessions stood out with 69% rating it as very good or excellent. Bulgaria had the strongest results overall, with 100% positive ratings (either very good or excellent) in all categories, and particularly high scores for course content (79% excellent) and interaction with instructors (64% excellent).

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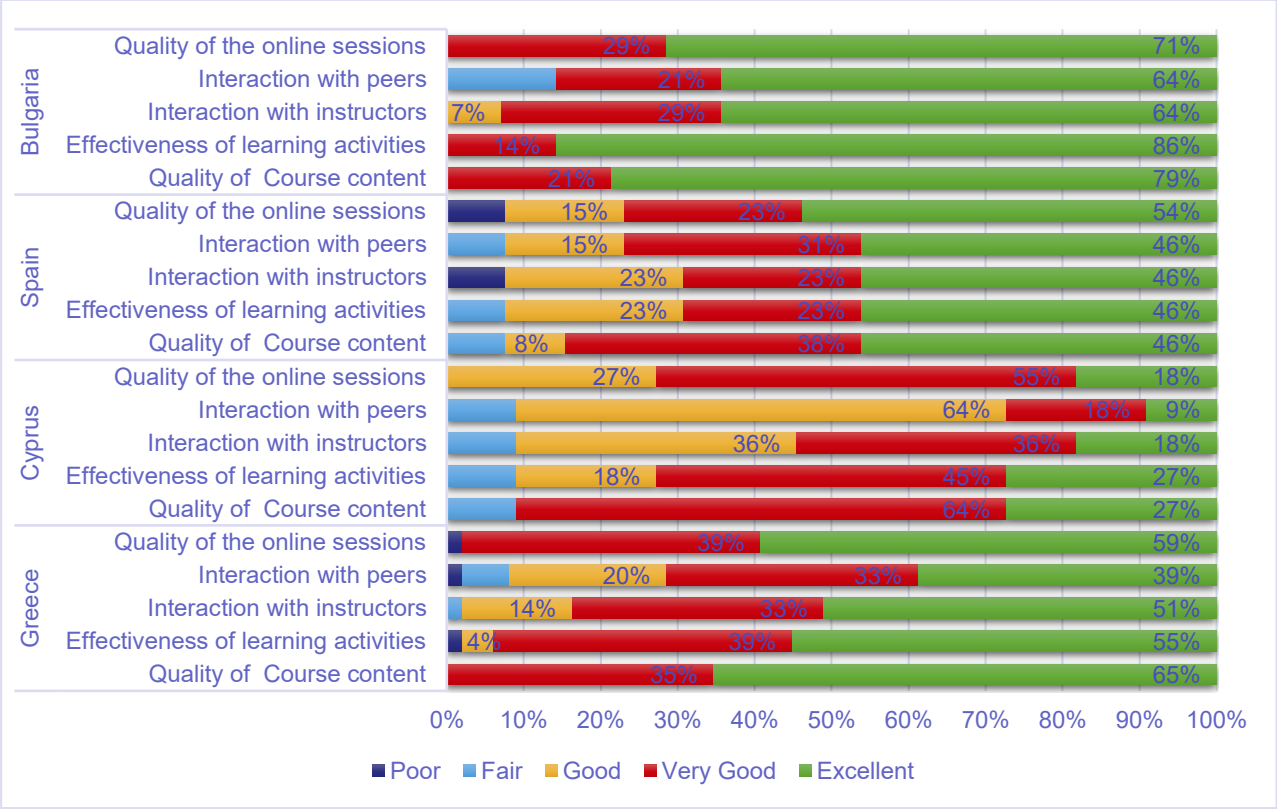


**Figure 43. Evaluation of the blended learning experience by country**

## 6.4 National Insights: Observations from the MOOC and Blended Course Implementation

The national assessment of the SpicE training programme offers a rich understanding of how the MOOC and blended learning phases were experienced across the four participating countries, Greece, Cyprus, Spain, and Bulgaria. While the overall structure and goals of the training remained consistent, the implementation and reception varied, reflecting different educational cultures, expectations, and levels of readiness for inclusive STEAM education.

### 6.4.1. Participation and Educator Profiles

Greece led the participation numbers by a wide margin in both the MOOC and the blended learning course. This high engagement likely reflects the strong institutional presence of the Greek partners and a robust community of educators already familiar with digital learning formats. The Greek cohort remained consistent in terms of demographics, with a predominance of female, in-service teachers aged 35–54 and with 2–10 years of experience in special education.

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Cyprus showed a smaller but stable group of participants, mostly composed of experienced in-service teachers. Over time, a shift was observed toward older educators, many of whom had extensive teaching experience—a factor that may explain their more cautious expectations of the training.

In Spain, participants represented a broad age range, and the cohort remained gender-balanced and consistent across both training phases. Interestingly, a gradual increase in pre-primary and primary educators was noted, alongside an upward trend in teaching experience, particularly among those with over 20 years in general education.

Bulgaria presented one of the most enthusiastic cohorts. While the group was predominantly female and in-service, there was a clear shift toward more experienced professionals, especially in the blended phase. Many had a solid background in special education, and this may have contributed to the high levels of motivation and satisfaction reported throughout the programme.

### 6.4.2. Expectations and Motivations

Across all countries, the primary motivation for joining the MOOC and the blended course was the opportunity to acquire new competences in Inclusive STEAM Education. Bulgarian educators in particular expressed an eagerness to apply the knowledge in their professional settings and to influence their broader educational environment. In contrast, while Greek and Cypriot participants also prioritized practical learning, they were more measured in their expectations regarding career advancement or policy impact.

Spanish participants showed a balanced profile, motivated by professional development and classroom application, yet less focused on certification or gaining a competitive edge. Interestingly, Cypriot teachers placed high value on collaboration and learning from others, despite showing lower interest in formal recognition.

These variations in expectations highlight the importance of understanding national contexts when designing and implementing European-level training programs.

### 6.4.3. Perceived Outcomes and Impact

Despite the differences in expectations, all countries reported positive outcomes from both the MOOC and blended learning phases. Greek and Bulgarian participants especially noted significant gains in knowledge, skills, and confidence to implement inclusive STEAM practices. In Bulgaria, participants also expressed high confidence

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in their ability to impact their institutions and contribute to policy-level discussions, a finding not commonly seen in other national contexts.

In Cyprus and Spain, the impact was perceived more at the personal and classroom level. Educators felt better equipped to improve their teaching, but fewer felt ready to initiate broader change. The perceived impact on institutional practice or policy influence was generally lower, indicating a potential gap between training and system-level empowerment.

Peer collaboration and interaction with experts were appreciated across all contexts, though once again, Bulgaria and Greece stood out for the strength of the learning communities that formed during the training. These communities were less evident in Cyprus and Spain, where interaction ratings were slightly lower.

### 6.4.4. Learning Experience and Satisfaction

When evaluating the quality of the learning experience, national differences became more pronounced in the blended phase. In Greece and Bulgaria, participants rated both the content and delivery methods very highly, particularly praising the clarity of instruction, relevance of activities, and the opportunities for interaction. These high satisfaction levels likely correlate with the strong facilitation and national coordination during the implementation.

In Cyprus and Spain, while the overall feedback was still positive, the quality of peer interaction and satisfaction with online sessions were more varied. In Cyprus, for example, although the course content was well-received, many participants rated peer engagement lower. In Spain, ratings were moderate across most areas, suggesting that participants appreciated the course but may have encountered logistical or engagement challenges.

# 7. Impact and Sustainability Assessment

The SPICE training programme was implemented in three structured phases: an online MOOC, a blended learning course, and international mobility exchanges. The aim of this design was not only to provide participants with knowledge and tools on inclusive STEAM education, but also to gradually enhance their competences, engagement,

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and professional community through increasingly interactive and practice-based formats.

To assess the overall impact and sustainability of this pathway, data were collected through pre- and post-surveys, qualitative open-ended responses, reflections from tutors involved in the mobilities, and feedback from mentoring and collaborative activities. This section offers an integrated analysis of the key outcomes and potential for long-term sustainability, drawing directly from the evaluation results of all three phases.

## 7.1 Progressive Learning and Competence Development

Each phase contributed to building participants' competences in a cumulative way.

- **In the MOOC phase**, over 1000 adult educators were introduced to foundational concepts in inclusive STEAM education through structured modules. Quantitative feedback from this phase showed that 89% of participants valued the knowledge gained, while 88% appreciated the resources provided. Participants also emphasized the usefulness of video lectures, case studies, and self-reflection tasks.
- **In the blended learning phase**, which followed for selected MOOC graduates, participants had the opportunity to go deeper into practical applications, scenario-based tasks, and collaborative exercises. Pre- and post-survey results indicated a further increase in confidence in adapting inclusive STEAM activities to their local contexts. Participants also appreciated the synchronous sessions, which facilitated real-time interaction with mentors and peers. Both pre-service and in-service educators reported that this phase helped bridge theory with their classroom realities.
- **In the mobility phase**, the most significant educational impact was observed. Participants explicitly stated that the hands-on, face-to-face setting enhanced their understanding and gave them the confidence to implement inclusive STEAM activities. Through collaborative projects, cultural immersion, and direct interaction with peers from different countries, participants not only applied what they had previously learned but also developed new competences in teamwork,

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intercultural communication, differentiated instruction, and real-time problem-solving.

This progression from knowledge to practice, confirmed both by participant reflections and tutor observations, demonstrates a strong educational impact and validates the phased design of the training.

## 7.2 Cross-Cultural Collaboration and Community Building

One of the core goals of the SpicE programme was to foster a European community of inclusive STEAM educators.

- **Participant feedback** across phases highlighted strong engagement in peer dialogue. For example, forum discussions in the MOOC and group work in the blended phase were seen as essential for reflection and exchange of practices.
- **During the mobility phase**, the majority of participants reported that collaborating with peers from other countries significantly enhanced their learning. Despite minor language barriers (noted by a small number of participants), the majority felt that communication was smooth, and many considered these intercultural interactions a highlight of the experience. Common work goals and shared educational values helped overcome any initial hesitation.
- The **qualitative responses** indicated that participants left the programme with a strong sense of belonging to a broader professional network. Several referred to this as a "community of practice" that they hoped would continue beyond the project's duration.
- Tutors reinforced this sentiment in their reports, noting that face-to-face interactions allowed deeper discussions, peer support, and spontaneous exchange that virtual formats could not achieve.

This **community dimension** of the programme is one of its most sustainable outcomes and offers a foundation for future collaborative projects or peer mentoring networks.

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## 7.3 Practical Application and Transferability

Participants consistently expressed a clear intention to apply what they had learned in their own classrooms.

- During the **MOOC and blended phases**, participants developed a solid understanding of the foundational concepts and gained access to practical resources, which significantly enhanced their preparedness for applying inclusive STEAM approaches in real-world educational settings.
- In the **mobility phase**, educators gained first-hand experience designing and testing inclusive STEAM lessons in small groups. Many reported learning how to adapt activities to support learners with different needs, especially children with learning difficulties, and how to use tools like Scratch, concept cartoons, and mind maps in inclusive ways.
- Responses to open-ended questions after the mobility confirmed that participants were now equipped to **design inclusive lesson plans**, integrate arts into STEM subjects, and promote **collaborative, inquiry-based learning**. Several educators also mentioned that they felt more confident in initiating interdisciplinary projects and in mentoring colleagues back home.

This reflects a **strong transferability** of the training results into diverse national and classroom contexts.

## 7.4 Sustainability and Forward-Looking Perspectives

The data also reveal important insights into the **conditions for sustainability** of the programme's outcomes:

- Participants explicitly asked for follow-up opportunities, alumni platforms, or national multiplier events. Their motivation to remain engaged shows that the investment in community-building paid off.
- Tutors emphasized the importance of **building on this momentum**, suggesting the need for:
    - Online spaces to share resources and stay in touch,
    - Opportunities to involve local schools in future mobilities,

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- Continued collaboration between participating institutions.

- Moreover, several suggestions highlighted the value of **including local stakeholders and real classroom settings** in future training phases to further ground the learning and expand the programme's reach.

## 7.5 Educational Intelligence Takeaways

Based on this evaluation, several educational insights emerge:

1. **Three-phase training pathways** allow for progressive and deeper learning outcomes, especially when starting with foundational theory and moving toward real-world practice.
2. **Face-to-face collaboration and peer exchange** are essential for developing reflective, creative, and inclusive teaching approaches.
3. **Cross-cultural mobility** contributes not only to competences but to shaping educators' identities and expanding their pedagogical perspectives.
4. **Communities of practice** are not just an outcome but also a condition for sustaining innovation in inclusive education.
5. **Flexibility, adaptability, and open facilitation** are key to engaging diverse adult educators in long-term professional development.

Overall, the SPICE training programme succeeded in its goal to empower educators in inclusive STEAM education through a coherent, phased approach that combined theoretical grounding, local application, and international collaboration. Each phase built upon the previous one, creating a rich learning journey that culminated in meaningful professional development and community-building.

Participants emerged not only with stronger competences, but also with a renewed sense of purpose, connection, and practical tools to make inclusive STEAM a reality in their classrooms. The training also proved to be a model for sustainable teacher education, offering a roadmap for future initiatives aiming to blend online learning, blended methodologies, and face-to-face mobility in inclusive and impactful ways.

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# 8. Recommendations

The SpicE training journey, from the online MOOC to the blended course and the international mobility programs, offered a rich and layered learning experience. Each phase brought different insights, and together they shaped a comprehensive pathway for professional development in Inclusive STEAM Education. Based on participants' and tutors' feedback, the evaluation data, and the observed outcomes, we outline the following recommendations addressed to the key stakeholders involved.

## 8.1 For Educators: Building Confidence through Experience

Throughout the three phases, many educators shared how their confidence grew as they progressed from theory to practice. The MOOC offered accessible entry points and resources to build foundational knowledge. The blended phase gave room for collaboration and adaptation of practices, while the face-to-face mobility truly brought learning to life.

Educators are encouraged to view such training not as isolated events, but as part of a continuous professional journey. We recommend that they:

- Start by engaging deeply with the foundational content and resources, even revisiting them as needed.
- Take initiative in applying inclusive STEAM practices in their classrooms, starting with small, manageable changes.
- Actively collaborate with peers, locally and internationally, to exchange ideas and co-develop activities.
- Reflect regularly, documenting what works and what needs improvement, and share these reflections with others to foster a culture of open learning.

Many participants highlighted how working with peers from different backgrounds helped them reframe their assumptions and discover new ways of reaching all learners, a testament to the transformative power of collaborative learning.

## 8.2 For Tutors and Facilitators: Guiding with Flexibility and Empathy

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Tutors played a pivotal role, especially during the mobility phase, not only in guiding the activities but also in creating a safe space for dialogue, experimentation, and cultural exchange. Their observations showed how important it was to be flexible, responding to different levels of experience, language proficiency, and national contexts.

Facilitators are encouraged to:

- Provide varied forms of support, allowing educators to feel seen and included.
- Create learning environments that encourage openness, where participants feel comfortable sharing uncertainties.
- Use real-world classroom scenarios and hands-on activities that connect directly with educators' everyday challenges.
- Encourage reflection, not just as a learning tool, but as a professional habit.

As one tutor noted, "***it wasn't just about delivering content, it was about building a community.***" This sense of connection was key to the success of the program.

## 8.3 For Educational Institutions: Turning Learning into Systemic Change

The impact of such training can be significantly amplified when educational institutions actively support their educators in transferring new knowledge into practice. Several participants noted how important it was to feel backed by their schools or university departments when trying out new methods or organizing collaborative activities.

We recommend that institutions:

- Formally recognize participation in EU training programs as part of professional development and include it in appraisal systems.
- Encourage participants to share their learning with colleagues, through internal workshops or mentoring schemes.
- Provide the space, time, and resources for educators to experiment with inclusive STEAM approaches.

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- Support cross-border initiatives and networking, both physically and virtually, to maintain the momentum created by such projects.

Where institutions see these trainings not as extracurricular but as integral to their development strategy, the long-term benefits become much more visible.

## 8.4 For Policy Makers: Embedding Inclusive STEAM in National Strategies

One of the key insights from this program is that transnational, competence-based training can complement national priorities in inclusive education and teacher upskilling. The mobility experience in particular proved to be a strong vehicle for intercultural understanding and professional growth.

Policy makers are encouraged to:

- Design and support training programs that combine online and physical components, ensuring accessibility and depth.
- Promote mobility schemes and European-level collaborations as part of teacher education strategies.
- Embed inclusive STEAM competences into national professional standards and curriculum frameworks.
- Use project outcomes and evaluation data to shape evidence-based policies for teacher professional development.

The SpicE pathway shows that when training is experiential, contextualized, and collaborative, it leads to real, lasting change.

## 8.5 For Project Coordinators and Designers: Sustaining Momentum and Community

Finally, for those designing and managing such programs, the SpicE experience offers a clear message: success lies in coherence, flexibility, and connection. The three phases worked best when they were seen as a continuum, not separate parts, but building blocks of the same learning experience.

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Coordinators are encouraged to:

- Design progressive pathways, where each phase deepens the previous one, balancing content and practice.
- Offer room for optional content and flexible entry points, acknowledging diverse needs and starting points.
- Support continued engagement after the formal end of training through alumni groups, online communities, or follow-up events.
- Include voices of tutors and learners in shaping future iterations, drawing from their experiences and suggestions.

The personal and professional transformations shared by educators and tutors alike demonstrate the value of well-structured, human-centered training. What began as a MOOC evolved into a vibrant, cross-cultural community of practice — one that holds promise for the future of inclusive STEAM education across Europe.

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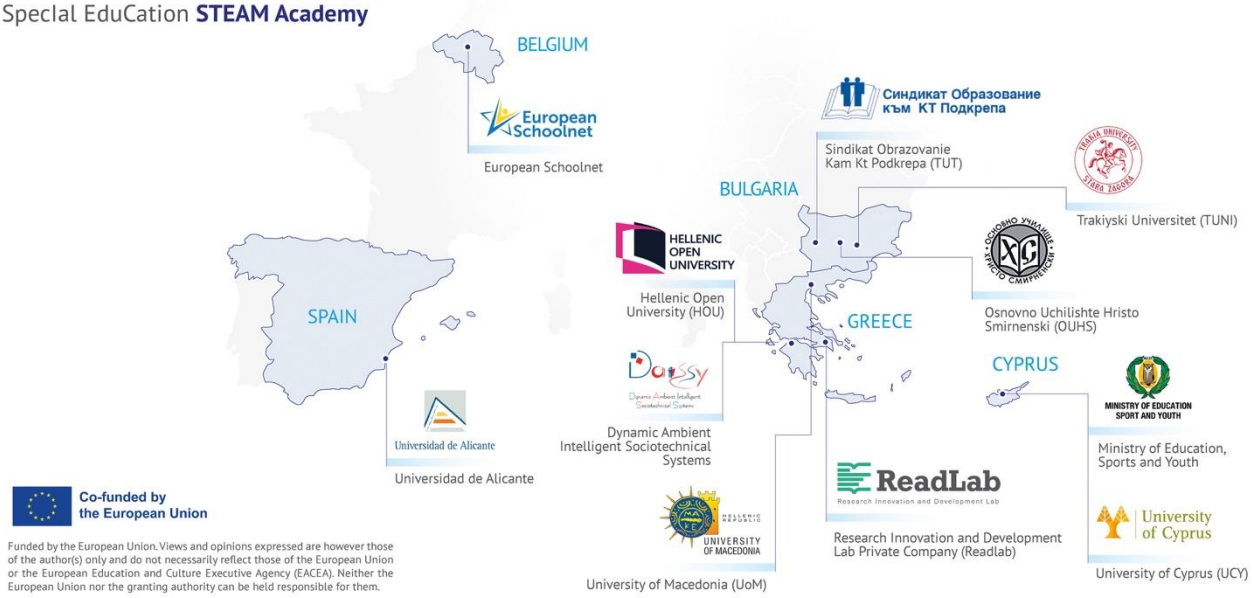


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