Companies Needs
Portugal National Report | March 2024

STEAM BOSS

boosting soft skills

Evaluation with VET system

National Report | January 2026

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Table of Contents

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

1. Introduction

This report aims to analyze the impact of the training received within the framework of the STEAM Bo.SS project on teaching practices in two Vocational Education and Training (VET) centers in Spain. The fundamental purpose of this analysis is to measure the extent to which the training has influenced teaching methodologies, especially regarding the implementation of the STEAM approach (Science, Technology, Engineering, Arts, and Mathematics), as well as to evaluate the importance given to soft skills following the training period.

Through a survey conducted among eight teachers from various fields—ranging from electronic engineering and robotics to marketing and professional English—the goal is to evaluate not only the adoption of new pedagogical tools but also the teachers' perception of the need to strengthen collaboration between the VET system and the business sector. The results obtained allow for the identification of successful cases and inspiring activities already being applied in the classroom, as well as the challenges and barriers faced by educators, such as a lack of time or specific resources.

This national report functions as a critical evaluation tool to assess how educators participating in the STEAM Bo.SS training initiatives are integrating 21st-century competencies into their curricula. The analysis is structured into specific dimensions: participant profiling, the practical application of the STEAM framework, the strategic role of soft skills in the learning process, and the current state of institutional-business partnerships, concluding with strategic recommendations for future interventions.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

2. Teacher/Trainer Profile

The profile of the teachers and trainers participating in the survey reflects extensive experience and a solid career path in the educational field. The surveyed professionals mostly have experience ranging between 6 and 25 years, with a notable presence of teachers with more than 15 years in the sector.

Regarding the educational level, all participants carry out their activity in Vocational Education and Training (VET), covering a diversity of technical and transversal subjects. The subjects taught include Electronic Equipment, Industrial Robotics, Programmable Sequential Systems, Marketing, Commercial Research, Business Model Prototyping, and Professional English. This variety allows for a multidisciplinary view of how the STEAM approach can be adapted to both technological cycles and areas related to services and communication.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

3. STEAM approach implementation

The implementation of the STEAM approach after the training shows a positive trend, although with significant nuances regarding its ease of application. According to the data collected, the majority of teachers (approximately 60%) have incorporated STEAM activities into their classes as part of the curriculum or as reinforcement. For many, the training has influenced their methodology "quite a bit" or "a lot," encouraging the use of active methodologies such as Challenge-Based Learning and practical projects.

Inspiring implementation examples:

- Emergency Drone Design: Students identified emergency situations, designed the device, assembled it, and presented the results. This activity was rated as the most motivating of the course.

- Business Model Prototyping (SEM): STEAM was used to analyze real business problems, prototype solutions with manipulative materials (LEGO), and perform financial estimates, integrating everything from environmental analysis (Science) to visual design and storytelling (Art).

- Industrial Robotics: A programming activity with a UR3 robot was implemented, oriented towards the design of writing and figures, seeking an artistic profile associated with technical programming (targeting the "Art" component of STEAM).

Areas of greatest change and challenges:

Teachers report that the greatest methodological changes have occurred in activity design and planning. However, a sector of the teaching staff (40%) has not yet integrated these practices. The main reasons are a lack of time and a lack of specific resources or materials. Some teachers consider that adapting the STEAM approach to their context is difficult due to the complexity of transversally integrating subjects within the available teaching time. The most difficult aspects to implement were identified as interdisciplinary design and time management. To improve this situation, teachers unanimously request more practical examples, teaching materials, and time for collaboration with colleagues.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

4. Soft skills: use and relevance

Awareness of the importance of soft skills has experienced significant growth among teaching staff following their participation in the different STEAM Bo.SS project trainings. Participating teachers and trainers almost unanimously value the relevance of these competencies in the learning process, describing them as "very important" or "essential" for the holistic development of students. There is a clear perception that these skills should not be considered a mere supplement to technical training, but rather a fundamental transversal axis that determines long-term employability and professional success.

Following the training period, educators have placed a special emphasis on explicitly working on critical competencies such as **complex problem-solving**, **decision-making under pressure**, and **efficient time management**. Likewise, there has been a renewed interest in fostering **proactivity** and **flexibility** in the face of changing environments—skills that companies are demanding with increasing urgency. The methodology applied has allowed these capabilities to be naturally integrated into technical activities, such as prototyping or programming.

The impact observed in the classroom has been remarkable and positive. The vast majority of teachers confirm having detected a substantial improvement in **active participation, engagement, and collaboration** among students when using dynamics centered on these skills. Students not only show greater motivation when they understand the practical utility of what they are learning, but they also develop a greater capacity for resilience and teamwork. In conclusion, the integration of soft skills within the technical framework of VET not only improves the classroom climate but also validates the effectiveness of an education that balances technical knowledge with the essential human competencies required by today's labor market.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

5. Interest and impact of collaboration with companies

Interest in strengthening collaboration with companies and other external agents has experienced notable growth as a direct result of the participation in the training. Participating teachers express a firm commitment to strengthening ties with the productive sector, recognizing that Vocational Education and Training (VET) cannot operate in isolation if it aims to be relevant and up-to-date regarding the technological demands of Industry 4.0.

Currently, collaboration manifests in various forms, although with different levels of consolidation. Most teachers already collaborate regularly with **local companies**, and to a lesser extent with national organizations. The most frequent areas of cooperation focus on **internship management and career guidance**; however, thanks to the project, a shift toward more integrated models is being detected. These include the **joint design of educational activities** and the direct participation of external professionals in the classroom, whether through technical talks, mentoring workshops, or specialized technological support.

A specific outcome of this increased interest is the integration of **real-world challenges** posed by companies into the training modules. This allows students to work on authentic problems using tools they will encounter in their future jobs, such as collaborative robotics systems or advanced marketing software. Despite this positive impact, teachers identify persistent barriers that hinder deeper collaboration. Chief among these are the **administrative burden**, the lack of classroom time to coordinate meetings with companies, and the need to establish more agile and formal communication channels. Ultimately, the project has served to validate that involving companies in daily training—and not just at the end of the academic cycle—drastically improves student readiness and reduces the skills gap, laying the groundwork for a more dynamic and connected VET ecosystem.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

6. Conclusions and Recommendations

The results obtained confirm that Spanish Vocational Education and Training (VET) teachers and trainers who participated in the training activities within the STEAM BoSS PROJECT possess a highly receptive attitude toward methodological modernization. There is widespread satisfaction with the tools acquired, highlighting that the STEAM approach is not merely an educational trend but a structural necessity to foster critical thinking and innovation capacity among students in technical cycles. The analysis of the surveys reflects that integrating artistic and scientific disciplines allows for a more holistic understanding of technology, which is vital in a labor market that no longer demands only operators, but professionals capable of redesigning processes. However, for this change to be sustainable and not rely solely on the enthusiasm of individual teachers, it is essential to institutionalize these practices within the study plans of educational centers.

One of the most relevant findings is the validation of soft skills as a driver of student engagement. It has been demonstrated that by integrating problem-solving and teamwork into technical challenges—such as designing emergency drones or programming collaborative robotics—student motivation increases exponentially. Teachers report that students become more involved when learning is tangible and has a clear social or business purpose. Nevertheless, the main barrier identified remains the rigidity of teaching schedules and the administrative workload involved in preparing these activities. Teachers demand greater flexibility that allows for experimentation without the fear of failing to cover mandatory theoretical content, suggesting that future training must be more practical, interdisciplinary, and less bureaucratic. Based on this analysis, the following strategic recommendations are proposed:

- **Creation of resource repositories:** It is imperative to provide teachers with "turnkey" teaching materials that include examples of specific STEAM challenges organized by professional fields, thereby reducing preparation time.
- **Promotion of learning communities:** The creation of networks should be encouraged where teachers can share experiences, such as using manipulative materials (like LEGO) or simulation software, to resolve technical doubts collaboratively.
- **Simplification of business collaboration:** The relationship with companies must evolve toward a strategic alliance. It is recommended to simplify procedures so that external professionals can intervene in the classroom, ensuring that young talent is trained under the real standards of today's industry.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

- **Interdisciplinary coordination spaces:** Centers must provide specific hours within the teacher's schedule so that educators from different subjects (e.g., English and Robotics) can design joint projects with a STEAM focus.

Co-funded by the European Union

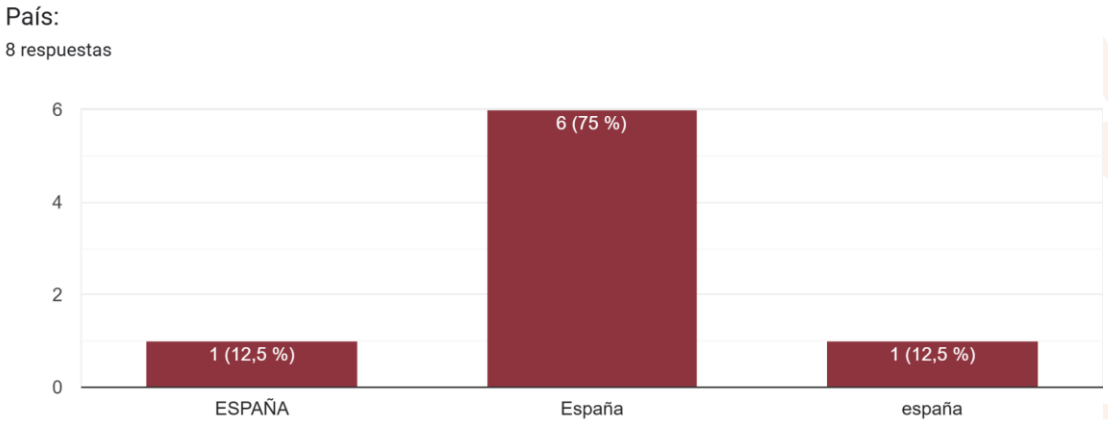
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

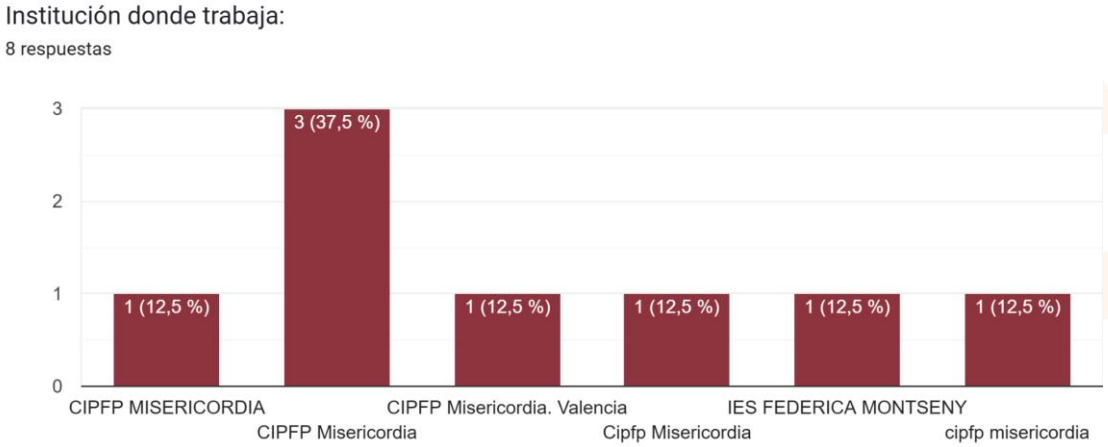
7. Appendix

- Survey questionnaire

https://docs.google.com/forms/d/1Rl7yXOmU_5OCX5DA5TtPGbmHFIfuh6SLrnuY7R5Lahc/edit

- Detailed tables and charts

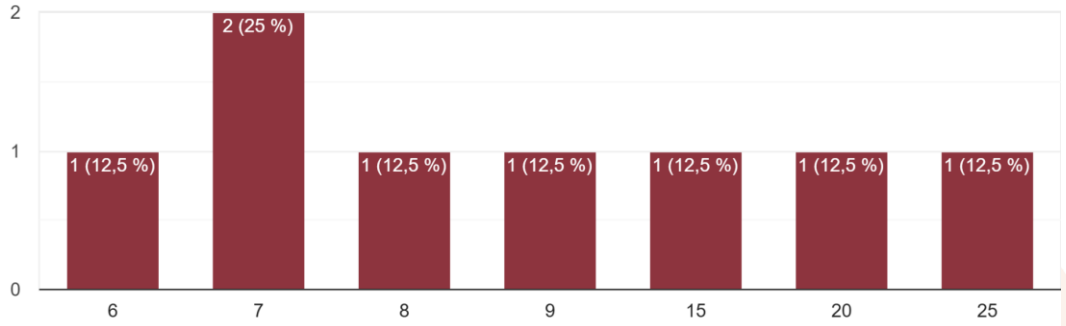




Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

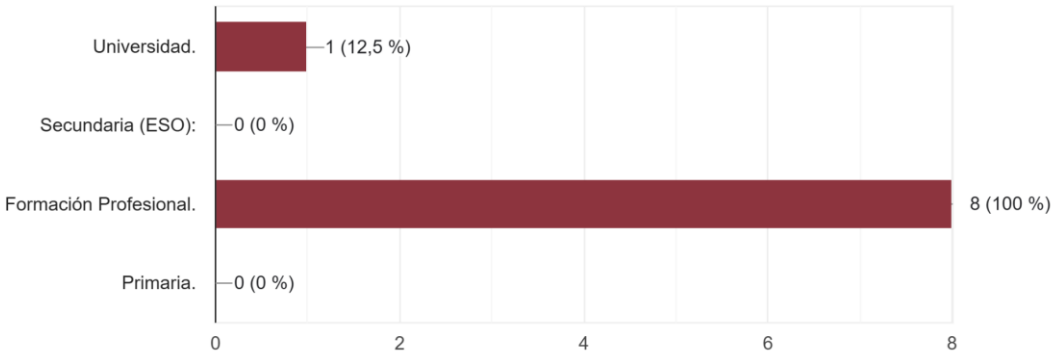
Años de experiencia docente:

8 respuestas



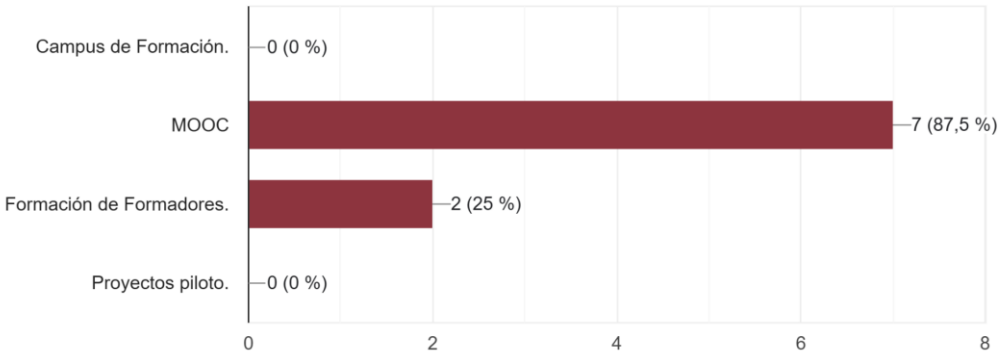
Nivel educativo en el que imparte docencia: (Marque los que correspondan)

8 respuestas



2. ¿En qué actividad o actividades de formación participó?

8 respuestas

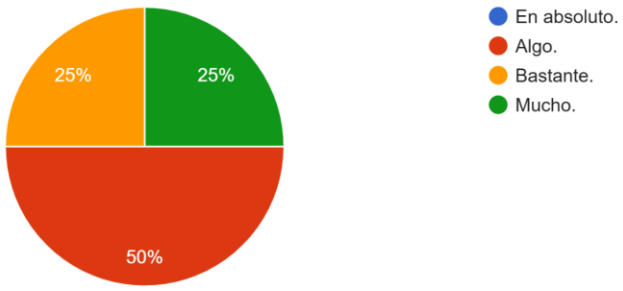


Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

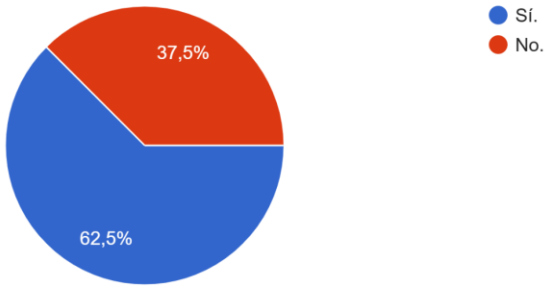
3. ¿En qué medida la formación en el enfoque STEAM ha influido en su metodología docente? Utilice la siguiente escala para indicar su respuesta:

8 respuestas



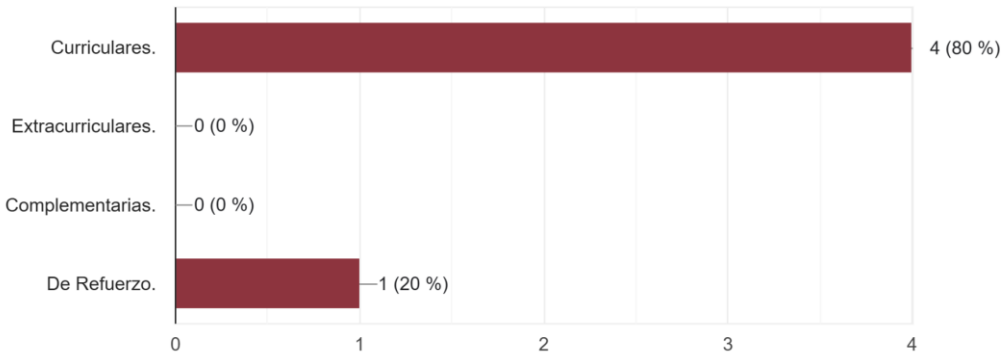
4. ¿Ha incorporado actividades centradas en STEAM en sus clases desde la formación?

8 respuestas



4. a) ¿Qué tipo de actividades realizó utilizando el enfoque STEAM?

5 respuestas

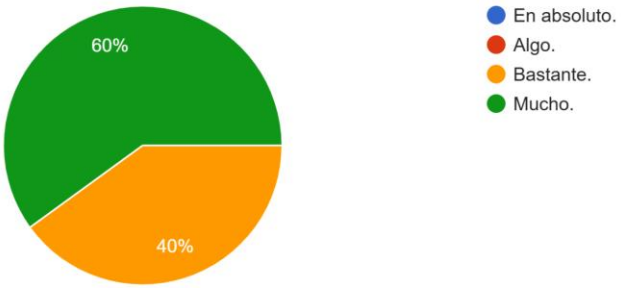


Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

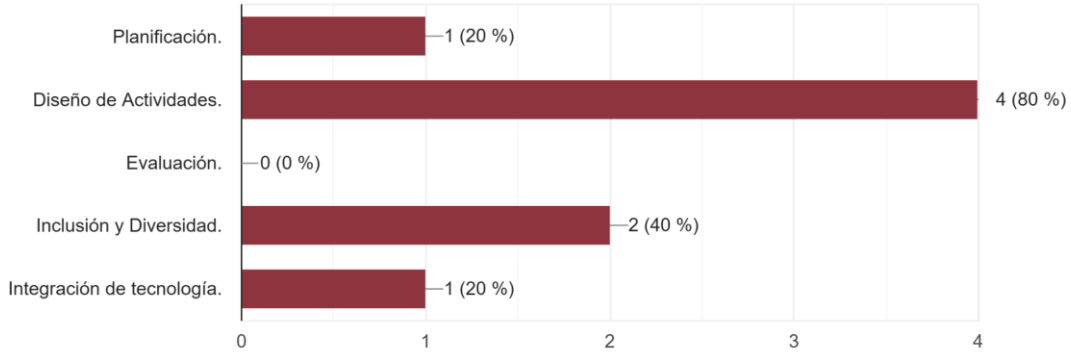
4. b) ¿Cuál es su grado de satisfacción con la introducción de estas actividades?

5 respuestas



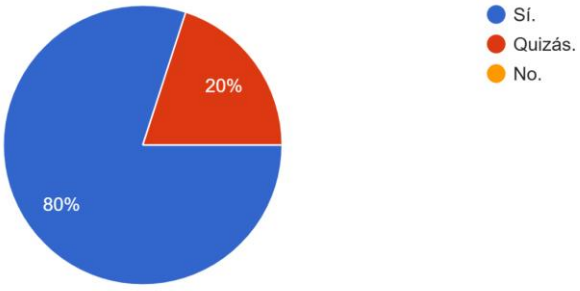
4. d) ¿En qué áreas de su docencia ha notado el mayor cambio metodológico?

5 respuestas



4. e) ¿Planea seguir desarrollando actividades utilizando este enfoque?

5 respuestas

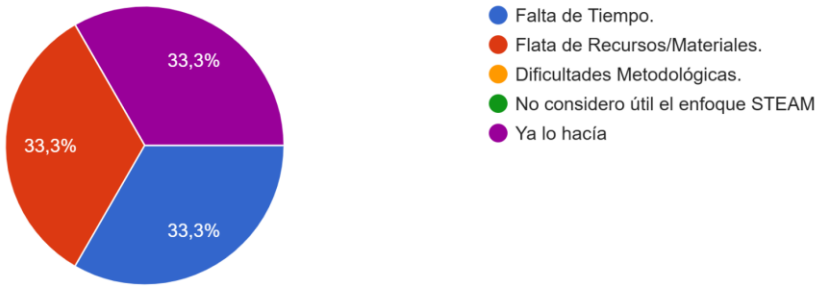


Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

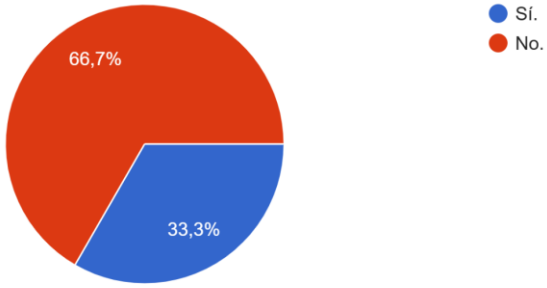
4a. ¿Cúal es la principal razón por qué no has integrado actividades STEAM en tus lecciones?

3 respuestas



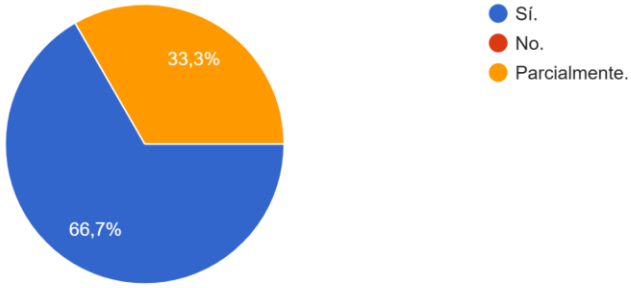
4b. ¿Le resultó difícil adaptar el enfoque STEAM a su contexto docente?

3 respuestas



4d. ¿Considera que la formación recibida fue suficiente para aplicar el enfoque STEAM?

3 respuestas

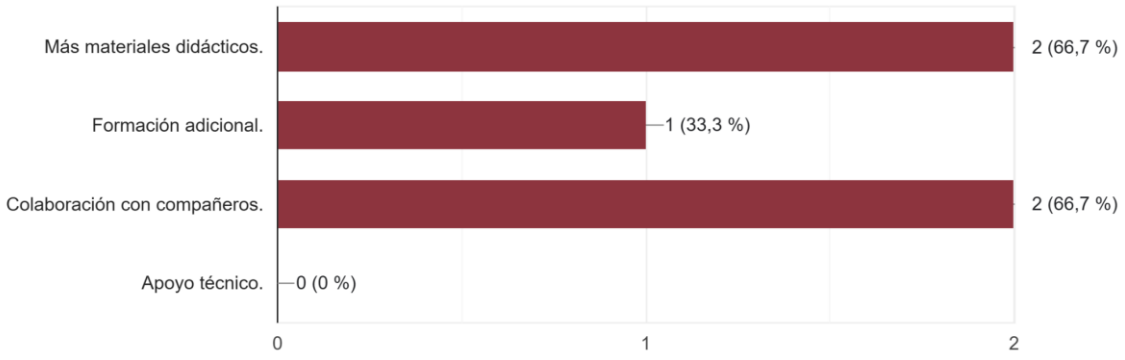


Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

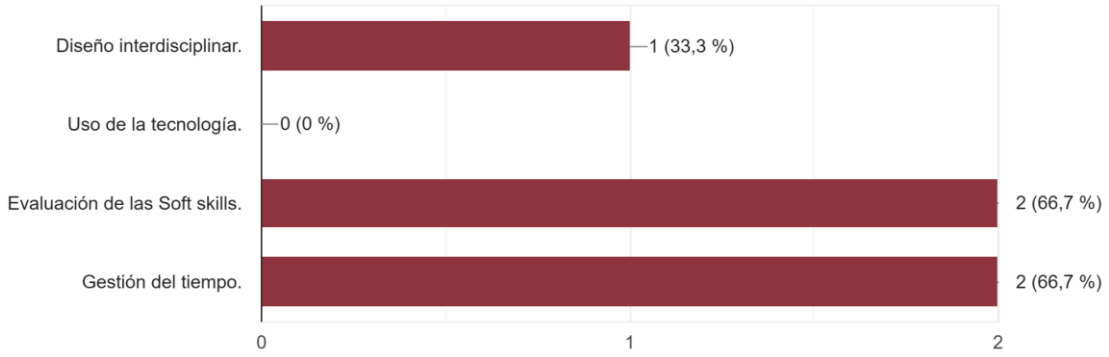
4e. ¿Qué condiciones le animarían a introducir actividades STEAM en el futuro? (Seleccione un máximo de 2)

3 respuestas



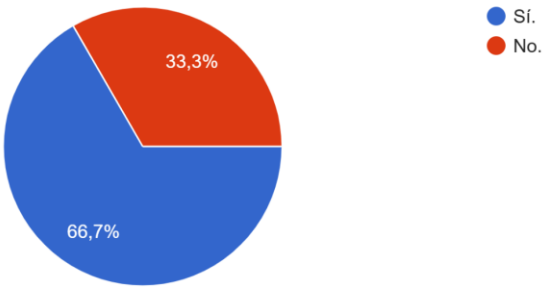
4f. ¿Qué aspectos de la metodología STEAM le resultan más difíciles de implementar? (Seleccione un máximo de 2)

3 respuestas



4g. ¿Le gustaría recibir más ejemplos prácticos o materiales para facilitar la integración de STEAM?

3 respuestas

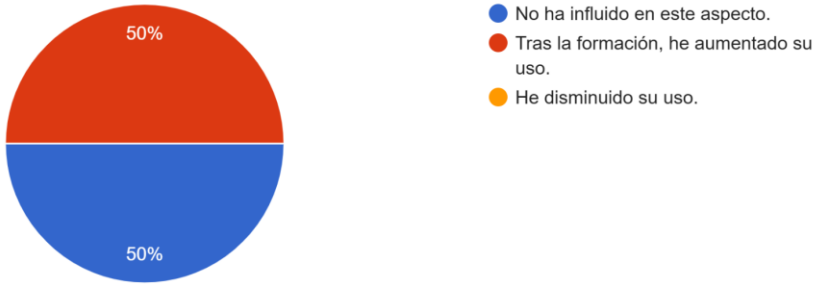


Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

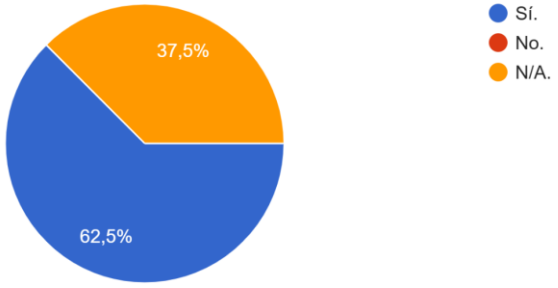
5. ¿Ha aumentado la frecuencia con la que utiliza metodologías activas (por ejemplo, ABP, aprendizaje basado en retos, aula invertida) desde la formación?

8 respuestas



6. ¿Se siente más preparado para su práctica docente tras la formación recibida?

8 respuestas



7. ¿En qué medida es más consciente de la importancia de las Soft Skills en el proceso de aprendizaje después de la formación?

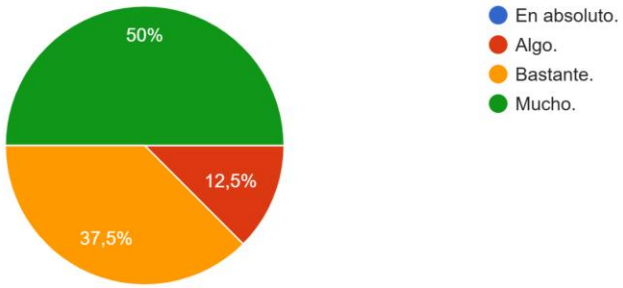
8 respuestas

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

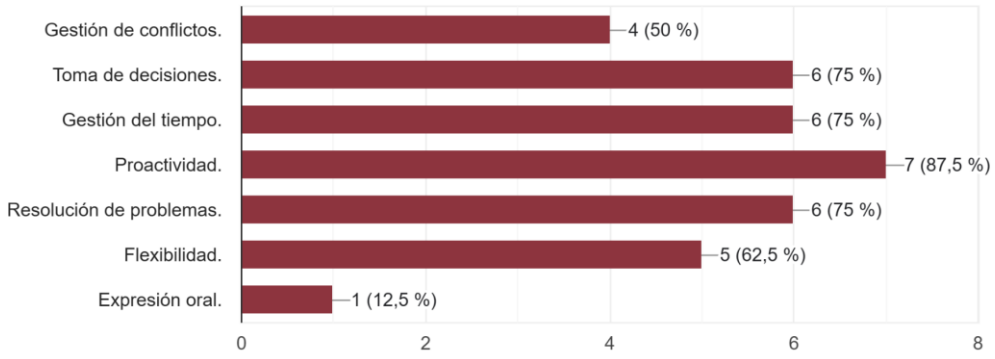
8. ¿En qué medida ha aumentado su enfoque en el desarrollo de estas habilidades en su docencia?

8 respuestas



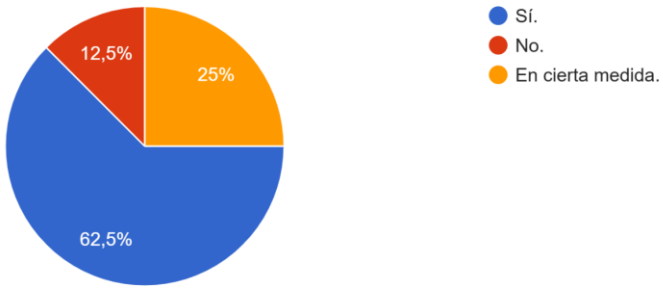
8. a) ¿Qué Soft Skills trabaja de forma más explícita en sus clases después de la formación?

8 respuestas



8. b) ¿Ha notado mejoras en la participación y colaboración del alumnado al trabajar con metodologías centradas en las Soft Skills?

8 respuestas

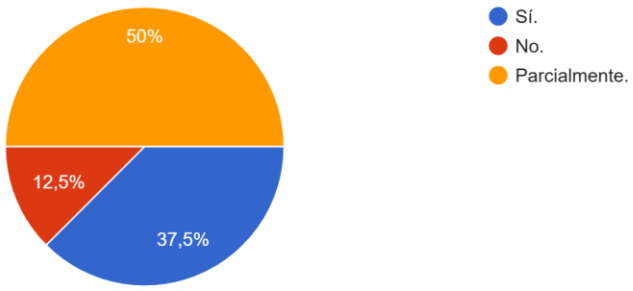


Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

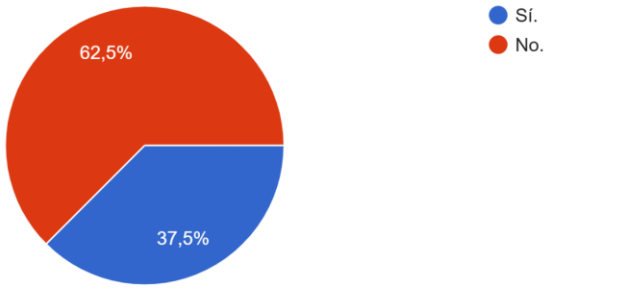
9. ¿Ha aumentado su interés en colaborar con empresas o agentes externos como resultado del proyecto?

8 respuestas



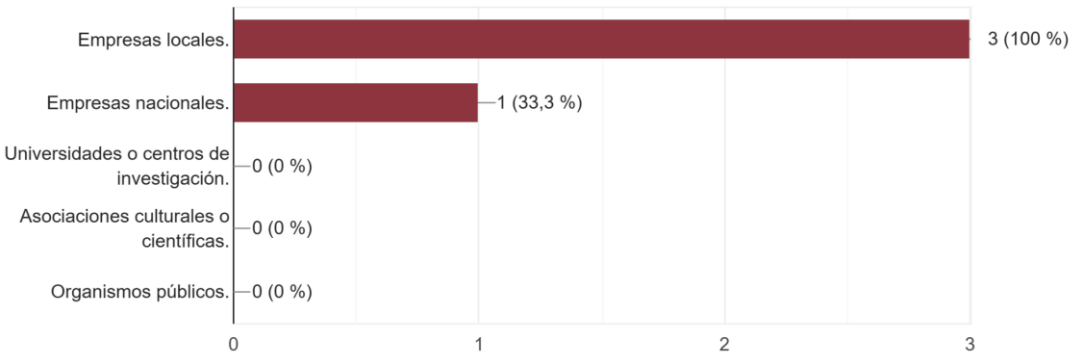
10. ¿Ha establecido o fortalecido contactos con empresas o instituciones desde la formación?

8 respuestas



10. a) ¿Con qué tipo de organizaciones ha colaborado? (Seleccione todas las opciones relevantes)

3 respuestas

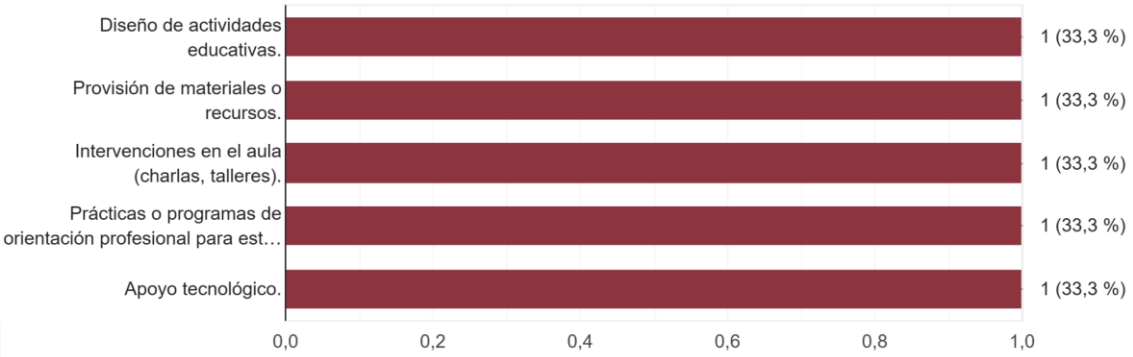


Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

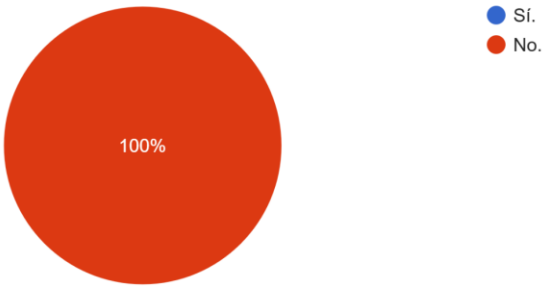
10. b) ¿En qué áreas se desarrolló la colaboración? (Seleccione todas las opciones relevantes)

3 respuestas



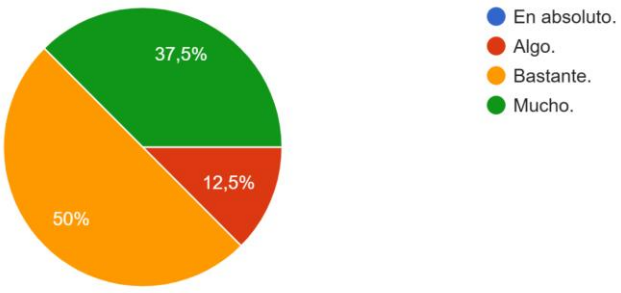
10. c) ¿Ha realizado alguna actividad o proyecto específico como resultado de esta colaboración?

3 respuestas



11. Finalmente, califique su satisfacción general con la formación en STEAM y Soft Skills.

8 respuestas



Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

THE BOOST THAT MAKES THE DIFFERENCE

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.