Infante Rejano, C., & Vallejo Acebal, N. (2026). The role of career advisors in the development of transversal skills in job seekers and students with virtual reality (VR) simulators. In C. Krause, C. Nägele, R. Schröder, M. Rosalska, & S. Romero-Rodriguez (Eds.), Career guidance in schools from European and international perspectives: Designing transfer in career guidance between science and practice (pp. 86–97). Career Lead/OAPublishing. https://doi.org/10.21240/cleg/2026/clc/97

The Role of Career Advisors in the Development of Transversal Skills in Job Seekers and Students With Virtual Reality (VR) Simulators

Infante Rejano, Carlos
carlos.infante.rejano@juntadeandalucia.es, Center for Orientation, Entrepreneurship, Support and Innovation for Employment of Andalusia (Andalusian Employment Service)

Vallejo Acebal, Nuria
nuria.vallejo@juntadeandalucia.es, Andalusian Employment Service

Abstract

Context: This paper presents the development of a pioneering project implemented by the Andalusian Employment Service (hereinafter, AES) since 2023 through the Andalusian Centre for Guidance, Entrepreneurship, Employment Support and Innovation, a space dedicated to innovation and experimentation in employment, career guidance, and entrepreneurship.
The project aims to enhance the employability of job seekers and students by fostering transversal skills using virtual reality (hereinafter, VR) simulators. It also serves as a valuable working tool for educational and employment professionals engaged in the development of personal and professional pathways.
Approach: Six VR experiences have been designed based on Bowman's "4 Cs Model" (2009) and the application of agile methodologies associated with project management. These experiences enable the creation of pedagogical environments linked to guidance practice, grounded in principles of knowledge management (Nonaka & Takeuchi, 1995), collaborative learning (Vygotsky, 1979), awareness of different levels of learning (Maslow, 2004), and decision-making processes that address uncertainty through a complex and systemic analysis of reality (Gelatt, 2003).
Findings: The study describes the process followed, from the design and experimental piloting of the VR experiences to their integration as a permanent service within employment offices and their availability to educational institutions, highlighting the role played by career guidance professionals.
Conclusions: As a result, a range of associated resources were designed and implemented to coordinate the management of this service between the central services of the Andalusian Employment Service and its 193 employment offices across Andalusia. Furthermore, the project has been strengthened through the creation of a collaborative network involving several Centres

CC BY
Co-funded by the European Union

for Orientation and Employment (COEs) across Spain, aimed at sharing and co-developing new immersive experiences in support of career guidance.
Finally, the paper outlines the next steps planned for this project to continue innovating in the provision of public career guidance services.

Keywords

career readiness, career guidance actions, usefulness assessment, secondary education

1 Contextualization

The present study examines the evolution of a pioneering project implemented by the Andalusian Employment Service (AES) since 2023 through the Andalusian Center for Orientation, Entrepreneurship, Employment Support, and Innovation (hereinafter, COE).

The COE constitutes a space for innovation and experimentation in employment, career guidance, and entrepreneurship. This space forms part of a nationwide network comprising one COE per Autonomous Community in Spain, all coordinated by a State-level Centre.

The AES serves as the primary gateway to active employment policies in Andalusia. Currently, a Comprehensive Management Model is being implemented within the framework of the Resolution of the Andalusian Employment Service approving the 2025 Annual Action Plan of the AES Agency. This model is applied across the network of Employment Offices and entails:

- The provision of comprehensive services.
- An understanding of career guidance from a humanistic perspective combined with a competency-based management approach.
- The promotion of job seekers' self-management in their proactive employment search and/or career advancement processes.
- A profound organisational, methodological, and technological transformation of guidance practices, aimed not only at enhancing employability but also at strengthening the role of the AES as an effective intermediary in the labour market.

In parallel, the literature highlights several advantages of using VR in career guidance contexts:

- *Immersive and experiential learning:* VR enables training in authentic, carefully designed environments that closely resemble real-world settings, including realistic tasks and contexts (Lynn Lowell& Tagare, 2023). This allows students and job seekers to explore occupations and work situations prior to encountering them in real life.
- *Development of transversal skills:* VR supports the acquisition of soft skills such as communication, teamwork, creativity, critical thinking, and decision-making (Lee & Shvetsova, 2019), which are increasingly demanded by employers. These competencies can be fostered through simulations and gamified learning dynamics.
- *Increased motivation and retention:* As an engaging and participatory tool, VR enhances intrinsic motivation and knowledge retention (North, 1996), often outperforming traditional theoretical learning approaches. Its multisensory nature contributes to the formation of stronger and more durable mental models.

- *Assessment and self-awareness:* In career guidance programs, VR facilitates self-assessment and the identification of areas for improvement in employability and job search strategies, enabling more personalized and effective guidance interventions.
- *Accessibility and scalability:* The integration of VR into public employment and vocational training services allows large-scale access, including for vulnerable populations such as long-term unemployed individuals and those over 45, through programs tailored to diverse needs.

This initiative addresses a critical challenge within the Andalusian labour market: most job seekers require further development of transversal skills to successfully navigate job search processes, job retention, and career transitions. From this standpoint, the following strategic challenges were identified:

1. To enhance the employability of job seekers through the systematic development of transversal skills.
2. To leverage technological resources to reach a broad population of job seekers within a technologically advanced social context.
3. To promote the acquisition of digital skills by ensuring equitable access for all job seekers.
4. To integrate VR as a functional tool within the daily practice of technical staff in employment offices.
5. To incorporate the integrated VR service into the official service portfolio of the AES.
6. To engage guidance- and employment-related institutions and administrations as users of the service.
7. To provide guidance professionals with training in the use of VR under an eclectic and evidence-informed methodological framework.

2 The VR Career Guidance Project: Objectives and Methodological Bases

Focused on enhancing the employability of job seekers and students, the primary objective of this initiative was to introduce innovative technological tools into employment offices to foster the development of transversal skills among job seekers, while simultaneously transforming the ways in which career advisors deliver guidance services and support to companies.

Given that VR experiences constitute valuable working tools for educational and employment professionals involved in the development of personal and professional pathways, a set of specific objectives was also defined:

- To use VR to provide job seekers with engaging learning experiences that support the development of social, communication, and emotional skills, thereby increasing their likelihood of accessing employment aligned with their needs and interests.
- To promote access to technology among the general population, reducing the digital divide and fostering equal opportunities in access to employment.
- To enhance adaptability by creating simulated work environments that reproduce real-life situations.
- To strengthen job seekers' confidence and self-esteem.

- To involve training- and guidance-related entities and public administrations as users of the service.
- To promote innovative service delivery models for job seekers within employment offices.
- To develop tools for the effective management of VR-based services in employment offices.
- To train key technical staff in the integration of this technological resource into their professional practice.
- To incorporate this technological service into the official service portfolio of the AES.

Regarding the methodological framework, five VR experiences were designed based on Bowman's "4 Cs Model" (2009), which conceptualizes guidance processes as a learning pathway structured around four sequential stages:

1. *Connections:* Within employment offices, career advisors contextualize the use of the VR simulator in relation to the job seeker's personal background and socio-labour circumstances. This stage aims to help participants link prior experiences with skill development, ensuring that the immersive experience is meaningful and oriented towards personal improvement.
2. *Concepts*: The VR simulator serves as a source of information and knowledge, enabling job seekers to engage in skill development from a multisensory perspective. This process facilitates the reorganisation and adjustment of prior knowledge in light of new information, in line with Vygotsky's concept of scaffolding.
3. *Concrete Practice*: The VR simulator enables experiential learning through practice, framing errors as opportunities for reflection and improvement. Activities may be conducted individually or collaboratively, thereby supporting the development of transversal skills through cooperative learning dynamics.
4. *Conclusions*: The VR simulator functions as a tool for enhancing self-awareness, assessing skills, and fostering attitudes and competencies related to effective job search behaviour. Learning is extended beyond the immersive experience itself, promoting the transfer of acquired skills to other professional and personal contexts with the support of career advisors.

In addition, these immersive experiences were developed using agile methodologies associated with project management. Each VR experience was designed through iterative weekly sprints, allowing for continuous refinement and adaptation throughout the development process (Figure 1).

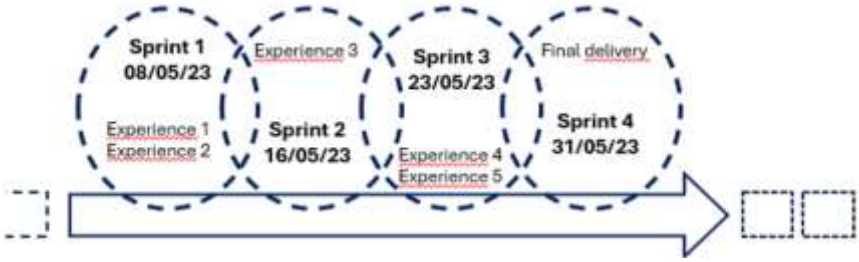
This working dynamic also considered the diversity of job seeker profiles, as well as the specific characteristics and idiosyncrasies of the work cultures within employment offices. Consequently, continuous adaptations were required in both the development and delivery of the VR experiences, with a strong emphasis on flexibility and responsiveness to emerging needs, to align the project and its implementation with the specific contextual conditions of each setting (Figure 2).

Figure 1
Dynamics of the Agile Methodology for Project Management



Note: Self-produced

Figure 2
Working Dynamic Followed in the VR Project



Note. Self-produced

Building on this methodological framework and the approach adopted for the design of *immersive resources,* a pedagogical environment closely linked to guidance practice was developed. By integrating Bowman's 4 Cs model with complementary conceptual and methodological approaches, the initiative fosters the progressive self-management of users throughout their job search processes, while simultaneously supporting career advisors in the systematic implementation of the VR service across different stages of guidance interventions. In this way, the creation of pedagogical environments embedded in guidance practice was actively promoted.

Career guidance is understood as a learning process in which individuals progressively acquire knowledge, skills, and self-awareness. Within this framework, the immersive VR experience functions as a learning resource that promotes:

1. *Knowledge management* (Nonaka & Takeuchi, 1995): the VR experience facilitates the transformation of tacit knowledge into explicit knowledge through processes of socialization, externalization, combination, and internalization.
2. *Collaborative learning* (Vygotsky, 1979), based on the identification of prior, emerging, and potential knowledge related to key competencies for job search. This approach encourages a dynamic analysis of competencies (Infante, 2019), whereby transversal skills are developed in an interconnected manner according to the relationships established among them.
3. *Awareness of evolving levels of learning*, drawing on Maslow's framework, which supports the transition from unconscious incompetence to conscious competence.

4. *Decision-making under uncertainty* (Gelatt, 2003): the VR experience supports users in distinguishing between possible, probable, and desirable objectives, fostering a complex and systemic understanding of decision-making processes. Emphasis is placed on adopting a constructive attitude towards uncertainty, approaching decisions with openness, to generate multiple future possibilities while acknowledging the inevitability of change.

In alignment with the *Comprehensive Management Model*, the overarching aim is to progressively empower job seekers to self-manage their professional development and employment trajectories.

3 VR Experiences in the AES

Five immersive VR experiences were initially designed and subsequently implemented within the employment offices of the AES:

1. *Experience 1: Self-assessment of transversal skills*
It consists of a self-assessment tool that allows users to evaluate their level of development in four key transversal competencies: creativity, collaboration, critical thinking, and communication.
2. *Experience 2: Elevator Pitch*
It enables job seekers to present their value proposition in a simulated elevator scenario alongside a potential employer. The software provides automated feedback based on two main criteria: whether the participant effectively manages the available time and whether the key elements of their professional profile are clearly communicated.
3. *Experience 3: Communication and Public Speaking*
In this experience the job seeker is placed in front of a virtual audience awaiting a speech. The objective is to construct and deliver a structured argument related to the individual's professional project, aspirations, concerns, and challenges. This immersive scenario places participants' communication skills, as well as their capacity to persuade and influence a demanding audience, at the centre of the learning process (Figure 3).

Figure 3
Visualization of Experience 3, Communication and Public Speaking



4. *Experience 4: Decision-Making*

In this experience, job seekers are required to deliver a valuable cargo to its destination, with each decision influencing the subsequent course of events. The content of the simulation is designed to foster analytical skills by encouraging participants to identify the advantages, disadvantages, and consequences of their choices. In addition, the experience promotes self-confidence, communication skills, and assertiveness, particularly in relation to articulating and justifying decisions made throughout the task.

5. *Experience 5: Teamwork.*

This experience places job seekers in a collaborative scenario. Participants are required to build relationships of trust with their peers while engaging in a shared challenge, thereby discovering the value of teamwork as a driver of collective success. The experience fosters interaction among job seekers, promotes cooperative and social learning, and facilitates the formation of learning communities.

In line with key recommendations regarding the use of VR in career guidance contexts (Prasolova-Førland et al., 2019), the design of the experiences carefully balances pedagogical objectives with elements of gamification and serious games. While such elements are essential for user engagement and the development of a sense of mastery, particular attention was paid to ensuring that educational purposes remained central, preventing entertainment from overshadowing learning outcomes.

4 Prior Pilot Program

Before the full implementation of the VR service across employment offices, a pilot program was conducted. This phase included preliminary training for career advisors to facilitate the effective integration of the resource into their professional practice. The pilot program applied Bowman's 4 Cs model as a guiding framework for the use of VR with job seekers, ensuring methodological coherence between the design of the immersive experiences and their implementation within guidance processes (Figure 4).

Figure 4
Principal Access to the Immersive Experiences



The pilot program consisted of scheduled sessions conducted across the eight provinces of Andalusia, with each session lasting approximately 30 minutes per participant. To inform the public about the initiative, a communication plan was implemented, including dissemination through radio broadcasts and social media channels. Over a three-month period, more than 700

job seekers took part in the pilot. The typical participant in the pilot program was a woman aged between 45 and 55 with a university degree. This user profile highlighted the need to place greater emphasis on attracting younger job seekers to public employment services. Participants reported a high level of satisfaction, with an average overall rating of 4 out of 5. The strengths identified by participants, underscore the potential of VR as an innovative and creative tool for developing transversal skills within public career guidance services.

Participants identified the following *strengths*:

1. VR-based skills training effectively supports and focuses active job search processes.
2. The experience enables job seekers to identify and/or confirm areas for improvement.
3. The intervention encourages continued engagement with career guidance services and sustained collaboration with career advisors.

In terms of *learning outcomes and challenges*, participants reported:

1. The need for greater familiarity with the VR simulator.
2. Initial difficulty in speaking or interacting with a virtual environment.
3. Perceived limitations related to the duration of the sessions.
4. A strong motivation to further apply and build upon the learning acquired.

Furthermore, the findings suggest that the incorporation of VR enhances the performance of career advisors by expanding the range of tools available in their professional practice.

To support the implementation of the pilot program, a dedicated website was developed to allow job seekers to request access to the VR service. Following the pilot phase, the platform was enhanced to enable external organisations primarily educational institutions such as universities, training centres, and social associations to also request the service (Figure 5).

Figure 5
Website to Address VR Services Requests



5 Results of the Implementation of the VR Service in the AES

Following the positive outcomes of the pilot program, a range of dissemination and operational materials were developed to support the full implementation of the VR service. These included promotional brochures, social media communication content, and a dedicated promotional video. In addition, several coordination resources were designed to facilitate the effective management of the service between the Central Services of the AES and the 193 employment offices across Andalusia, through the respective Provincial Employment Directorates.

Specifically, the following resources and materials were deployed:

- Three VR headsets were allocated to each province, along with three tablets for viewing the experiences, an additional external battery, and a cleaning kit.
- A comprehensive User Guide was developed, with particular emphasis on recommendations regarding when and how VR content should be integrated into guidance processes (Figure 6). This aspect was considered essential, given that the service is embedded within the professional practice of career advisors.
- Promotional materials, including banners and roll-ups, were designed both to publicize the service and to visually identify the VR simulators.
- Evaluation questionnaires were developed for both users and participating organisations to assess the quality and impact of the VR service.

Figure 6
A User Guide for the Pedagogical Integration of VR Experiences in Career Guidance



Given the extensive network of 193 employment offices in Andalusia, the implementation of this immersive resource required a high level of coordination. To this end, a standardized procedural protocol was established to structure communication and logistics between Central Services and local employment offices. Within each Provincial Directorate, three designated contact persons act as intermediaries between Central Services and employment offices. These

offices regularly submit updated schedules indicating the location and availability of VR equipment within each province.

Central Services also maintain six additional VR headsets to provide logistical support in cases where provinces require additional equipment for events, workshops, or conferences. In practice, the three headsets assigned to each province are primarily used within employment offices for guidance-related activities, as the VR experiences were explicitly designed to be integrated into structured guidance processes.

In collaboration with career guidance professionals in employment offices, additional materials were developed to further promote the VR service and optimize its management. As part of this coordination effort, a digital management tool was created to handle requests from job seekers and organisations. This tool enables the approval, monitoring, and traceability of requests, the administration of evaluation questionnaires, and access to VR usage statistics, thereby supporting systematic monitoring of the service's impact.

Since the full implementation of the service in June 2024, participation has averaged over 30 users per month. To date, 506 individuals have engaged with the VR experiences, representing an average of 42.1 participants per month. Among the five immersive experiences available, those related to *Strengths Speech* and *Public Speaking* have been the most frequently used. Users reported an average perceived difficulty level of 6.16, a perceived usefulness score of 7.64, and an overall satisfaction rating of 8.06.

In parallel, demand from external entities and public administrations has also been significant. Since September 2024, 55 regional events requested by various organisations have been supported through the VR service, with most events involving fewer than 100 participants. These entities rated the service with an average score of 7 out of 10 in terms of usefulness, satisfaction, and likelihood of requesting the service again.

To ensure effective monitoring and traceability, dedicated evaluation and follow-up instruments were developed. The online support tools implemented to manage requests from both individual users and organisations directly contribute to the strategic objective of incorporating training- and guidance-related entities as active users of AES services.

In addition, key technical staff in each province received specialized training in the use and management of the VR service. These staff members subsequently trained their colleagues within their respective territories, resulting in a total of 217 trained professionals.

The VR service has now been formally incorporated into the AES Service Portfolio under code 121 (*Development of personal skills for employability*) and code 123 (*Preparation for selection tests*). In the near future, it will also be integrated into the AES's business and user satisfaction evaluation system. Overall, this initiative has contributed to the introduction of innovative guidance delivery methods and has demonstrated the value of VR as a tool for the sustainable development of transversal skills over time.

6 Roles of the Career Advisors Derived from the Management of an VR Service for Transversal Skills Training

Based on the implementation process, several professional roles assumed by career advisors in the management of the VR service within AES offices were identified:

- Designers of materials for the dissemination and development of immersive experiences aimed at strengthening skills associated with successful job search processes.

- Facilitators and regulators of learning processes mediated by VR within guidance interventions.
- Mentors for both job seekers and fellow employment professionals in the integration of VR technologies into guidance practice.
- Co-evaluators of immersive experiences, contributing to the continuous improvement of guidance service quality.
- Innovators in the design and implementation of career guidance processes.

These roles align with four core pillars that underpin key intervention strategies in career guidance (Infante, 2019):

- Management of communication styles
- Management of interpersonal relationship styles
- Management of learning styles

These pillars underscore the inherently educational nature of all guidance processes. First, they highlight the individual as the central element of intervention, distancing guidance practice from standardized or prescriptive approaches and emphasizing the need for flexibility, adaptability, and strategic responsiveness to human diversity. Second, they reaffirm the centrality of the client, positioning job placement outcomes as the result of individuals' actions and the contextual conditions they encounter or actively shape (Infante, 2019).

7 Collaboration with COEs from Other Autonomous Communities in Spain

During the implementation of the VR service within AES offices, several Centres for Orientation and Employment from other Autonomous Communities expressed interest in the initiative. This interest led to the establishment of a collaborative group involving COEs from the Balearic Islands and Catalonia.

A dedicated collaborative workspace was created on the COE Network website to coordinate joint development efforts. As a result of this collaboration, two additional immersive experiences were designed and incorporated into the VR simulators. One of these experiences focuses on simulating a job interview and is specifically intended to strengthen job seekers' competencies and confidence during selection processes, thereby enhancing their opportunities for labour market integration. This simulation can be integrated at different stages of the guidance process, depending on individual needs and levels of preparedness.

The second experience addresses the transversal competency of adaptability to change and is currently undergoing testing and refinement.

Other COEs, including those in Madrid, Aragón, and the Basque Country, have also expressed interest in the initiative, and preliminary contacts have been established to explore future collaborative developments.

8 Next Steps in the Andalusian VR Project

Future developments of the Andalusian VR project will focus on the continuous improvement and expansion of the service. Planned actions include:

- Enhancing the VR software by integrating AI-based virtual assistants.
- Designing new immersive experiences targeting additional transversal skills.

- Adapting the software to improve accessibility for job seekers with disabilities.
- Further consolidating the VR service within employment offices.
- Expanding ongoing training programs for career advisors.
- Hosting the VR service on an upgraded web platform.
- Strengthening evaluation and monitoring mechanisms for VR-based interventions.
- Developing complementary materials and resources, such as guides, instructional videos, and practical exercises.
- Continuing collaboration with other COEs across Spain to promote the exchange and co-development of VR experiences.
- Linking the VR initiative with other COE Andalusia programs, such as the transversal skills gamification program launched in 2023.

References

Andalusian Employment Service (2025). Resolución del Servicio Andaluz de Empleo por la que se aprueba el Plan de Acción Anual 2025 de la Agencia Servicio Andaluz de Empleo [Resolution of the Andalusian Employment Service approving the 2025 Annual Action Plan of the Andalusian Employment Service Agency]. https://www.juntadeandalucia.es/sites/default/files/2025-02/Resolucion_PAA2025_Definitivo.pdf

Bowman, S (2009). *Training From the Back of the Room! 65 Ways to Step Aside and Let Them Learn.* Pfeiffer editors.

Gelatt, H.B. et al (2003). The Power of Positive Uncertainty: Making Creative Career Decisions. In Walz, G. & Knowdell, R. (Eds.), *Global Realities: Celebrating Our Differences, Honoring Our Connections*. International Career Development Conference. CAPS Press.

Infante, C. (2019). Educational Vision of Employment Guidance: Requirement for strategic intervention. In Romero, C et al (2019): *Rediscovering Education: New Perspectives*. Octaedro Ed.

Lee, J. H., & Shvetsova, O. A. (2019). The Impact of VR Application on Student's Competency Development: A Comparative Study of Regular and VR Engineering Classes with Similar Competency Scopes. *Sustainability, 11*(8), Article 2221. https://doi.org/10.3390/su11082221.

Lynn Lowell, V. & Deepti, T. (2023) Authentic learning and fidelity in virtual reality learning experiences for self-efficacy and transfer. *Computers & Education: X Reality, 2*, Article 100017. https://doi.org/10.1016/j.cexr.2023.100017

Lynn Lowell, V. & Tagare, D. (2023). *Authentic Learning and Fidelity in Virtual Reality Learning Experiences for Self-Efficacy and Transfer.* https://doi.org/10.1016/j.cexr.2023.100017

Maslow, A. (2004). *Jerarquía de necesidades* [*Hierarchy of needs*]. Quetzal.

Nonaka, I. & Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press.

North, S. M. (1996). Effectiveness of Virtual Reality in the Motivational Processes of Learners. *International Journal of Virtual Reality,2* (1), 21–33.

Prasolova-Forland, E., Fominykh, M. & Ekelund, O. (2019 Empowering Young Job Seekers with Virtual Reality. *2019 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), Osaka (Japan)*, 295-302. doi:10.1109/VR.2019.8798179.

Vygotsky, L.S. (1979). Mind in society: The development of higher psychological processes. Harvard University Press.