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CDO-VR

Joint Evaluation Report

Overview of CDO-VR Project Results and Evaluation of Activities in Slovenia and Austria

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1. Introduction

1.1 Purpose of the evaluation

This evaluation report provides a comprehensive overview of the results of the CDO-VR project (Interreg Slovenia-Austria) with a focus on assessing the effectiveness of the activities carried out in both partner countries. The purpose of the evaluation is multifaceted:

- to determine the extent to which the project activities achieved the set quantitative and qualitative targets regarding the number of persons involved, the scope of workshops delivered and the quality of implementation,
- to assess the pedagogical and motivational value of using virtual reality (VR) technology as an innovative tool for career orientation and the promotion of shortage occupations,
- to analyse user behaviour and the effectiveness of VR applications based on analytical data from VR headsets and participant feedback,
- to identify areas for improvement and formulate recommendations for the continued use and scaling of the developed approaches.

The evaluation also serves as a basis for transferring the project results into practice and for formulating guidelines that will enable the sustainable use of VR technology in career orientation processes beyond the conclusion of the project.

1.2 Brief description of the project and its objectives

The CDO-VR project is a cross-border project co-funded under the Interreg Slovenia-Austria programme, whose central objective is the promotion and build interest for deficit occupations through modern VR technology. The project addresses the challenge of skilled labour shortages in occupations that are essential for the functioning of the economy and society but are often insufficiently known or unappealing among young people and jobseekers.

The project partnership comprises five organisations from both countries: Ljudska univerza Ptuj (LUP, lead partner), Art Rebel 9 d.o.o., Employment Service of the Republic of Slovenia (ZRSZ), ISOP-Innovative Social Projects (ISOP) and NOWA Training Counselling Project Management (NOWA). Each partner contributed specific competences - from the development of technological solutions and VR applications with embedded artificial intelligence for tracking user progress to direct work with target groups in educational and employment counselling settings.

Project objectives pursued by the project were:

- maintaining and expanding the use of VR as an innovative tool for career orientation and the promotion of shortage occupations,
- increasing the visibility and attractiveness of shortage occupations among young people, unemployed persons and other target groups,
- promoting informed decision-making about educational and career pathways,

- fostering sustainable cross-border cooperation in the development and application of innovative approaches to educational and career orientation.

In both countries, participants used the VR application to explore six selected deficit occupations: cook, care worker / nursing, electrician, metal technician with welding, builder and IT systems administrator.

Activity 1 - Creative workshops at schools using VR (career orientation for young people). In the 2025/2026 school year, creative workshops were delivered at schools in Austria (federal state of Styria) and in Slovenia (predominantly the Podravje region). In Slovenia, the workshops took place at 17 primary schools and involved 530 students, predominantly from 9th grade (28 classes), while in Austria they were held at 15 schools (Mittelschule, Polytechnische Schule) with 308 participants (128 female, 180 male). In total, the school workshops involved more than 838 students. The plan was to deliver 15 workshops in each country; this target was met or exceeded in both cases.

The workshops included an introductory group exercise to familiarise participants with the occupations (e.g. "What do you know about this occupation?"), a presentation of VR technology, individual use of VR headset, quizzes on competences required for individual occupations, a moderated discussion and completion of evaluation questionnaires. In Slovenia, the space was divided into 5 stations (VR headsets, profession parcours, profession box), between which students rotated within 2 teaching hours. In Austria, the workshops typically lasted 3 teaching hours.

Activity 2 - Workshops for unemployed and jobseekers using VR (career orientation for unemployed persons). Between August 2025 and March 2026, workshops for unemployed and jobseekers were delivered in both countries as part of active labour market policy measures. In Slovenia, 22 events were carried out at the Employment Service of the Republic of Slovenia (ZRSZ), Regional Office Ptuj, involving 100 persons (43 male and 57 female). The workshops were conducted in three formats: individually (3 long-term unemployed persons), in small groups of up to 6 participants (49 persons, structured 4-hour workshops with a career development manual) and in larger groups (48 persons from Ptuj, Ormož and Maribor, station-based delivery). In Austria, 5 workshops were delivered at the institutions Steirisches Jugendcollege and A Fit Südoststeiermark, involving 59 persons (36 male and 23 female).

The project target was to deliver workshops for a total of 100 unemployed in both countries. With the inclusion of a total of 159 persons (59 in Austria and 100 in Slovenia), the target was exceeded by 59%. The average satisfaction rating for the workshops in both countries reached 4.4 out of 5.

The key advantage of the project lies in the use of modern VR technology, which allows participants not only to learn about deficit occupations in theory but also to experience them in practice - in a virtual environment. This makes entry into unfamiliar occupational fields accessible and appealing and at the same time motivating, thereby lowering technical and psychological barriers to exploring new career possibilities. VR technology was technically successfully implemented in both settings; in Slovenia, the average rating of the VR experience was 4.8/5, while in Austria, 85.5% of students rated the VR experience with 4 or 5 stars. Additionally, Art Rebel 9 d.o.o. integrated an artificial intelligence system into the background of the VR application, which enabled tracking of user progress, measurement of the effectiveness of individual modules and collection of data on the behavioural patterns of participants within the virtual environment.

In addition to the above-mentioned workshops, the project also included the training of professionals (53 trained persons in total) and the establishment of three CDO-VR centres.

1.3 Data collection methodology

The evaluation of the CDO-VR project is based on a combination of quantitative and qualitative data collection methods, enabling a comprehensive and multidimensional insight into the effects of the project activities.

Structured surveys (questionnaires) served as the central evaluation tool across all project components. In the school workshops in Slovenia, surveys were conducted among 505 students (evaluation of pedagogical effectiveness) and 512 students (analysis of user experience) from 17 primary schools. Participants rated several dimensions of their experience on a five-point scale (1-5): overall satisfaction with the workshop, level of enjoyment, perceived amount of new knowledge, task difficulty and clarity of instructions, quality of teamwork and popularity of individual occupations. In Austria, comparable questionnaires were used at 15 schools (308 students), where 92% of students rated the workshops with 4 or 5 stars. In the workshops for unemployed persons, participants in both countries also completed evaluation questionnaires; in Slovenia, 229 completed questionnaires were collected from the workshops for adult jobseekers.

VR application analytics (data from VR headsets) constituted an innovative data source provided by Art Rebel 9 d.o.o. through embedded artificial intelligence running in the background. The following parameters were tracked: time spent by users in each simulation, attention devoted to individual parts of the application, task difficulty (time to completion, number of errors, use of the help function), success rate in individual tasks and behavioural patterns within the virtual environment. Data was collected from more than 10,000 recorded sessions and enables comparisons between users, between individual occupational modules and between different implementation locations.

Observation was used as a supplementary method during workshop delivery. Facilitators and trainers observed group dynamics, participant responsiveness, social cohesion within groups, willingness to use VR headsets, behavioural changes during activities (before and after the VR experience) and any technical or content-related challenges. In Austria, the experiences of including students with special needs (approximately 12-15 students with assistants) and observations regarding gender-related differences in occupation choices were also specifically documented. Observations are recorded in the implementation reports.

Administrative data sources included records on the number of workshops delivered, the number and structure of participants (by gender, age, school or institution), implementation dates, parental consent forms and logistical data. For the jobseeker workshops, this data was obtained in cooperation with ZRSZ, Regional Office Ptuj (Slovenia), and with partners ISOP and NOWA at the institutions Steirisches Jugendcollege and A Fit Südoststeiermark (Austria).

Enrolment in educational programmes and courses. Where data was available, the evaluation also included information on enrolment in upper secondary schools offering programmes for deficit occupations and on the participation of unemployed persons in training and courses. This data enables a partial assessment of the project's longer-term impact on the career decisions of the target groups.

In Austria, official statistics from the Public Employment Service (AMS) on available apprenticeships and demand for workers in deficit occupations were also used for contextualisation.

Feedback from facilitators and school staff were obtained through interviews and written feedback. Teachers and school guidance counsellors highlighted the high level of student motivation, the practical orientation of the approach and the effectiveness of combining active learning, curiosity and hands-on experience as a complement to existing forms of career orientation.

2. Participants Profile and Participation

This section provides an overview of the participants involved in the CDO-VR activities, including their number, key demographic characteristics and types of activities attended. The findings are presented separately for Slovenia and Austria to reflect the specific participation patterns in each country.

2.1 Slovenia

Behind every number in this report there is a classroom that went quiet the moment the headset went on, or a jobseeker who tried welding for the first time without ever leaving the room. In Slovenia, the CDO-VR pilot was carried out by Ljudska univerza Ptuj, as lead partner, together with the support of Employment Service of Slovenia, Ptuj Regional Office (ZRSZ, OS Ptuj). Between them, the two partners brought the virtual reality tool to the project's two priority audiences: young people in the final grades of primary school, still weighing up which career path to take, and unemployed adults looking for a way back into work — often into a field they had never seriously considered before. The figures that follow describe the Slovenian side of the story; the Austrian experience is told separately in the section that comes after.

How many took part, and where?

The largest group by far were schoolchildren. VR workshops travelled to 17 primary schools across the Podravje region and reached 530 pupils in 28 classes, every one of them with a signed parental consent form in place. Many of these schools sit in smaller, rural municipalities — places like Žetale, Podlehnik, Makole and Juršinci — which mattered a great deal to us: these are exactly the communities where a hands-on encounter with a profession is hardest to come by, and where a mobile VR set can make the biggest difference. Alongside the schools ran a second, entirely separate strand of workshops for unemployed and adult jobseekers, organised through ZRSZ, OS Ptuj. This adult audience gave us 229 completed questionnaires between October and December 2025 — a rich body of feedback from people actively thinking about their next career move. Taken together, these activities comfortably surpassed the targets we set ourselves when the project was first designed, and they form the Slovenian half of the wider cross-border result the partnership is proud to report: 838 pupils and 159 unemployed persons welcomed into the creative presentations, 53 professionals trained, and three CDO-VR centres now up and running.

Who they were?

The two strands were kept distinct, so there is no double-counting between the children and the adults. What stands out in the adult group is how evenly balanced it was: of the 229 respondents, men and women were represented in equal measure (111 and 111), with a handful preferring not to state their gender. For a project that set out to challenge the idea that certain trades "belong" to one gender or the other, that balance is quietly encouraging. The primary-school side of the pilot is documented in its own dedicated analyses, covering between 505 and 512 pupils across the same 17 schools — a sample large enough to speak with real confidence about how this generation responds to learning through VR.

What did we actually do?

Participation took a few different shapes depending on the audience. For pupils, the heart of it was the in-school VR workshop, delivered on-site by our team, complete with attendance lists and consent — a familiar classroom turned, for an hour, into a building site, a hospital ward or a kitchen. For adults, it was a guided VR session run with ZRSZ, OS Ptuj, where career counselling and experience with VR application went hand in hand. And across both, there were creative, hands-on presentations in which people didn't just learn about deficit occupations – they stepped into the role and experienced the work through virtual reality. Whichever door they came through, participants could try their hand at six deficit occupations featured in the tool: cook, care worker, electrician, builder, systems administrator, and metal technician with welding. Two of these occupations drew the most attention: the cook and the care worker proved the most popular by a clear margin, a small but telling indication of where curiosity — and perhaps future interest — is strongest.

2.2 Austria

In Austria, several creative presentation activities were carried out to engage different target groups and promote participation through innovative and interactive formats. A total of 308 students took part in creative presentations in schools. Among these participants, 128 were female and 180 were male, demonstrating a broad reach among young people in educational settings.

In addition to activities in schools, creative presentations were also organized for job seekers. A total of 59 unemployed participants attended these presentations, including 36 men and 23 women. These activities aimed to provide opportunities for personal development, motivation, and engagement while supporting participants in exploring new perspectives and strengthening their skills.

Furthermore, a special creative presentation event was organized in connection with International Women's Day. This event was attended by 13 unemployed women. Through these activities, creative presentations served as a valuable tool for reaching diverse groups and fostering participation, confidence, and creating the own future.

- Key demographic characteristics
- 15 schools: 9 in urban areas, 6 in rural areas
- Types of activities in which users participated (workshops, presentations at trade fairs, information sessions, etc.)

This evaluation report focuses on workshops carried out with students and young job seekers. The workshops followed a common framework design, which was adapted according to the specific conditions, needs and interests of each target group.

The workshop started with an interactive activity focusing on deficit occupations. This helped participants understand the importance of these professions and encouraged them to think about different career opportunities. After that participants were introduced to the Virtual Reality environment and received practical guidance on how to use the VR headset. One example occupation was demonstrated to show how the VR experience works. Participants then explored all or selected occupations one by one. While one student tried the VR experience, the other participants followed the process on a screen and could observe the tasks and working environment. After each occupation, participants completed a short quiz worksheet. This activity helped them reflect on what they had seen, review important information and strengthen their understanding of the profession. After the group activities and discussion in the classroom, participants had the opportunity to individually try out selected occupations in the VR environment according to their own interests. The workshops concluded with participants completing evaluation questionnaires to provide feedback on their experiences.

This flexible workshop approach allowed the activities to be adjusted to different groups while ensuring that all participants received practical insights into deficit occupations and possible career pathways.

3. Analysis of VR Application Usage and User Engagement

The CDO-VR project provided participants with the opportunity to explore different occupational environments through VR simulations integrated into the CDO-VR application. During the pilot implementation, the application automatically collected and analysed data on users' interactions and behaviour. These data provide insights into how participants engaged with the simulations, how much time they spent on individual activities, which elements received the most attention, and where users encountered difficulties.

The analysis focused on user engagement, session duration, task repetitions, interaction patterns and the use of individual simulations. AI-supported analytics also enabled the monitoring of task completion times, errors and other interaction data, providing a basis for identifying behavioural patterns and areas requiring further optimisation.

Partner Art Rebel 9 monitored and evaluated the knowledge acquisition and progress of all participants throughout the entire pilot implementation using AI-supported analytics. The company also conducted an evaluation of the tool from the perspective of the target groups, integrating an artificial intelligence system in the background to measure users' performance and skill development. This approach provided valuable insights into the improvement of participants' competencies, skills, and knowledge.

We analysed user behaviour within the CDO VR application, including the amount of time users spent in each simulation, which parts of the application received the most attention, and which areas users found most challenging.

Using AI, we also assessed user performance by tracking the time required to complete specific tasks, the number of errors made, and the time spent on individual activities. These data can be used to establish performance benchmarks that allow comparisons between users as well as across different occupational simulations. The objective of the analysis was to evaluate application usage, the level of user engagement, and the effectiveness of interactions within the virtual environment.

The data analysis indicates that the VR application achieves a high level of user engagement and learning performance. The highest levels of immersion were observed in the Cook and Care worker modules, while the Builder module represents a critical point due to very short session durations, suggesting possible technical issues or barriers at the beginning of the experience.

The success rate is generally high (exceeding 85% in certain modules). However, more complex tasks, such as those in the modules System Administrator, Metal technician with welding, and Electrician, reveal challenges including higher failure rates, skipped safety procedures, and longer task completion times.

The analysis also shows that users rarely make use of the built-in help function, indicating that introducing more proactive in-application guidance would be beneficial. In addition, optimisation of the reference completion times and further improvements to the user experience in more demanding scenarios are recommended.

Conclusion: The application effectively supports experiential learning while the integrated analytics clearly identify the key areas for further development and optimisation.

4. Assessment of User Performance and Learning Outcomes

Building on the analysis of user behaviour and application usage presented in the previous section, this chapter focuses on user performance and learning outcomes. The assessment combines quantitative data generated by the VR application with evaluation questionnaires, participants' feedback on the VR experience and observations collected during the pilot workshops.

The analysis examines task completion, completion times, errors, use of the help function and overall performance across the six occupational simulations. Where relevant, the quantitative findings are complemented by qualitative observations and user feedback to provide a more comprehensive assessment of the learning experience.

4.1 Analytical Report on the Use of VR Simulations - Performance and Efficiency

Performance is measured by comparing the actual completion time (Tactual) with the reference completion time (Treference) and by analysing the use of the help function.

Task Efficiency Index: The analysis of individual tasks reveals a gap between user knowledge and execution speed.

Overview - All Modules

Module	Completion	T_actual vs T_ref	Key Finding	Status
01 - Cook	>85%	Well below T_ref	Highest user persistence; intuitive tasks	Recalibrate T_ref
02 - Electrician	Variable	~40% of T_ref	Strong reading-success correlation	Issue: safety skipped
03 - Care worker / nursing	Very high	Follows learning curve	Most balanced module	On track
04 - Sys Admin	~55% (NetworkConnect)	Bimodal: 30%-180%	Greatest performance variation	Recalibrate T_ref
05 - Builder	High (after 30s)	N/A	Highest abandoned sessions	Issue: onboarding
06 - Metal technician with welding	Low (CNC)	Near T_ref	Most physically interactive	Issue: CNC guidance

Module Details

Module 01 - Cook

User Behaviour	Contains the largest amount of data and demonstrates the highest user persistence.
Performance	More than 85% of all task records were completed successfully.
Observation	The average instruction reading time is exceptionally low (<5 seconds), indicating that users perceive the tasks as intuitive rather than complex or hazardous.
Recalibration	Reference times are too generous and do not reflect actual user behaviour.

Module 02 - Electrician

User Behaviour	Shows the strongest correlation between reading the instructions and successfully completing the task. Users who spend more than 10 seconds reading the instructions are 40% more likely to complete the CheckFuseBox task successfully.
Challenge	A significant proportion of errors occur in tasks requiring a precise sequence of actions (e.g. ElectricityPath).
Performance	Actual completion time is often only 40% of the reference time, indicating that users frequently skip mandatory safety procedures.

Module 03 - Care worker / nursing

User Behaviour	The most balanced module. Task completion times closely follow a typical learning curve: the first tasks are completed more slowly, while each subsequent task is completed more efficiently.
Performance	Very high completion rates recorded across all pilot locations (Škofja Loka and Ljubljana).

Module 04 - System Administrator / technician

User Behaviour	Demonstrates the greatest variation in user performance. Two distinct user groups: beginners (~180% of T_ref) and experienced users (~30% of T_ref). Virtually no middle group.
Critical Issue	The NetworkConnect task has a failure rate of almost 45%, making it the least successfully completed task across all modules.
Recalibration	Reference times are too strict - users typically require approximately twice as long to complete the tasks.

Module 05 - Builder

User Behaviour	Contains the highest number of 'empty' sessions (<10 seconds). Out of more than 10,000 recorded sessions, this represents several hundred abandoned attempts.
Analysis	Users who remain in the simulation for the first 30 seconds generally complete the module successfully, indicating that the issue lies primarily in the initial onboarding experience.

Module 06 - Metal technician with welding

User Behaviour	Makes the greatest use of physical interaction and simulation, particularly in the Weld task.
Performance	Although session durations are close to the expected reference time, many CNC tasks end with a 'Completed: No' status.
Issue	Operating the CNC machine in VR is too demanding without additional guidance.

Overall Findings

Finding	Description
Help Function Usage	Across the entire dataset, the number of Help Clicks is statistically insignificant. Users are more likely to abandon a task than to request help within the VR environment.
T_ref Calibration - Cook	Reference times are too generous and do not reflect actual user behaviour. Recalibration needed.
T_ref Calibration - Sys Admin	Reference times are too strict - users typically require approximately twice as long to complete the tasks. Recalibration needed.

5. Analysis of User Feedback, Satisfaction and Perceived Learning

While the previous sections focus on user interaction with the CDO-VR application and performance-related analytics, this chapter examines participants' perceptions and feedback regarding the VR experience and the workshops. The analysis is based on questionnaires, satisfaction ratings, participants' comments and observations collected during the pilot activities in Slovenia and Austria, focusing on overall satisfaction, perceived learning, interest in the occupations presented, the perceived usefulness of VR for career guidance, and suggestions for further improvement.

5.1 Slovenia – User Feedback, Satisfaction and Perceived Learning

5.1.1 Feedback and Satisfaction

The creative presentations using VR technology were rated positively by both target groups. Unemployed participants rated the VR experience with an average score of 4.4 out of 5, while primary school pupils gave an average rating of 4.8 out of 5.

Evaluation criterion*	Primary schools	Unemployed
How did you like VR-experience?	4,8	4,4

** Data on the overall VR experience were collected from October 2025 onwards. Scale: 1–5, with 5 representing the highest rating.*

The results indicate a high level of acceptance of the VR-based approach among both target groups.

5.1.2 Perceived Learning and Career Awareness

The feedback indicates that participants recognized the use of VR technology as an effective way of presenting deficit occupations within career guidance. Virtual reality enabled participants to gain a clearer insight into work processes and tasks, which contributed to an easier presentation and understanding of the characteristics of individual occupations.

The analysis of the results shows that participants reported the greatest learning gains in the areas of competences and skills required to perform a specific occupation. They also gained relevant information about the working environment and other characteristics of the specific deficit occupations presented.

Observations collected during the workshops indicate that participants were actively engaged in the virtual environment. Participants frequently discussed work tasks, the working environment and aspects they found interesting during or after the VR experience. These observations suggest that the VR experience stimulated discussion and reflection about the occupations presented.

5.1.3 Interest in the Occupational Profiles

Participants selected among the six deficit occupations presented through the CDO-VR simulations. The results were as follows:

Occupation	Primary school pupils	Unemployed
Electrician	27 %	36 %
Metal technician with welding	18 %	35 %
Cook	71 %	46 %
Builder	32 %	42 %
Systems Administrator	16 %	39 %
Care worker	43 %	35 %

Among primary school pupils, Cook received the highest level of interest (71%), followed by Care worker (43%) and Builder (32%).

Among unemployed participants, Cook (46%), Builder (42%) and Systems Administrator (39%) were among the most frequently selected occupational profiles.

The results should be interpreted within the scope of the six occupations included in the CDO-VR application. Since participants selected from a predefined set of six occupations, the findings indicate preferences within the CDO-VR occupational profiles but cannot be used to predict future career choices or demonstrate that participation in the VR experience will increase the likelihood of choosing one of these occupations.

5.1.4 Key Positive Findings

The Slovenian pilot activities indicate several positive aspects of the CDO-VR approach:

- Participants responded positively to the use of VR for career guidance.
- VR provided a more concrete and visual insight into occupational tasks and working environments.
- Participants reported gaining useful information about the competences and skills required for specific occupations.
- Observations during the workshops indicated active engagement and discussion among participants.
- The VR experience provided an opportunity to explore deficit occupations in an interactive and experiential way.

Overall, the findings suggest that participants valued the opportunity to experience occupational environments virtually rather than receiving information about occupations exclusively through conventional presentation formats.

5.1.5 Challenges and Suggestions for Improvement

The most common suggestions for improvement concerned the scope and depth of the VR experience rather than the basic workshop concept.

Participants expressed a desire for:

- a wider range of occupations to be presented,
- more detailed presentation of individual work tasks,
- more practical examples of occupational activities,
- a longer period of time dedicated to VR activities,
- greater variety within the VR experience and
- further technical development of the VR experience.

The feedback therefore suggests that participants generally accepted the basic concept and would prefer to expand and further develop the existing approach rather than replace it.

5.2 Austria – User Feedback, Satisfaction and Perceived Learning

5.2.1 Feedback and Satisfaction

The Austrian workshops were rated positively by all participants without exception. 92% of participants rated the workshop with 4 or 5 stars.

The average ratings were as follows:

Evaluation criterion*	Schools (Secondary and Polytechnic Schools)	Unemployed
How did you like the workshop	4,5	4,4
How boring or exciting did you find the workshop?	4,5	4,12
How well did you understand the trainers?	4,5	4.56
How much have you learnt that was new?	4	4,2
How would you rate your overall VR experience? *(Data from January 2026 onwards)*	4,0	4,2

* Data on the overall VR experience were collected from January 2026 onwards. Scale: 1–5, with 5 representing the highest rating.

Overall, the workshop received very positive feedback from both secondary/polytechnic school participants and young jobseekers. Participants rated the workshop itself highly, with average scores of 4.5 and 4.4 out of 5. Secondary and polytechnic school participants also found the workshop exciting and easy to understand, both receiving an average rating of 4.5. Both groups reported learning new things, with ratings of 4.0 and 4.2, respectively. The overall VR experience was also rated positively, with average scores of 4.0 for school participants and 4.2 for unemployed participants.

5.2.2 Perceived Learning and Career Awareness

The results show that young people found the deficit occupations presented in the VR environment interesting. The VR environment was appreciated by all participants. Even participants who already

worked in or had trained for these occupations confirmed that the selected VR tasks provided a realistic and meaningful impression of the jobs.

One of the key strengths of the workshops was the possibility for participants to watch the VR experience on a large screen while another participant was using the headset. This allowed participants to understand what was happening in the virtual environment before trying it themselves.

As a result, many young people who were initially unsure or hesitant about using VR gained confidence and decided to take part after observing others. The live screen projection was also helpful for explaining how to use the VR headset and demonstrating the required hand movements in a practical and easy-to-understand way.

5.2.3 Interest in the Occupational Profiles

The occupational preferences recorded in the Austrian pilot activities were as follows:

Occupation	Schools (Secondary and Polytechnic Schools)	Unemployed
Electrician	26,6%	25%
Metal Technician with welding	23,4%	20,8%
Cook	18,8%	16,7%
Builder	15,6%	15,0%
Systems Administrator	12,5%	10,0%
Care worker	9,4%	8,3%

The results show that the preferences of the two Austrian target groups were very similar, with only relatively small differences in the percentages. Among both secondary and polytechnic school students and unemployed participants, Electrician was the most frequently selected occupation, followed by Metal Technician with welding. Cook and Builder also received considerable interest, while Systems Administrator and Care worker were selected less frequently.

As in Slovenia, these results should be interpreted as participants' preferences among the six occupational profiles included in the CDO-VR application. They do not demonstrate a causal effect of the VR experience on subsequent career decisions.

5.2.4 Key Positive Findings

The Austrian pilot activities identified several key strengths of the CDO-VR approach:

- The VR environment was appreciated by all participants.
- 92% of participants rated the workshop with 4 or 5 stars.
- The workshops received average ratings of 4.5/5 and 4.4/5 among the two target groups.
- The overall VR experience was rated positively, with scores of 4.0/5 and 4.2/5.
- Participants perceived the selected VR tasks as realistic and meaningful representations of the respective occupations.
- Live screen projection supported group learning and helped participants understand the VR experience before using the headset themselves.
- Observing others appeared to reduce initial uncertainty and increase confidence in using VR.

- The VR format provided an interactive environment in which participants could explore occupational profiles and discuss work tasks and working environments.
- The workshops reached girls and boys, as well as young women and men, and provided a safe environment in which participants could explore occupations they might not otherwise have considered during career planning.

Overall, the Austrian findings indicate a high level of acceptance of VR as a tool for experiential career guidance.

5.2.5 Challenges and Suggestions for Improvement

Several important factors contributed to the successful implementation of the workshops.

First, it was essential to reduce participants' concerns about using the VR headset. Before starting, participants were shown that the headset could be removed at any time, which helped them feel more comfortable. Participants using the VR headset should also be supported throughout the experience. Knowing that someone is present to guide them and ensure their safety increases their confidence and allows them to focus on the activity.

In addition, the VR sessions should be integrated into a broader workshop programme that provides further information about the different occupations. This helps participants better understand the professional context of the VR experience. When planning the workshops, it is important to ensure that there is enough space for participants to move safely while completing VR tasks, as some activities require larger body movements. It is also recommended that several facilitators are present during the workshop. This ensures that participants using the VR headset receive adequate support, while others who are observing or working on accompanying materials are also supervised.

Finally, it is beneficial to schedule extra time after the main workshop. This gives participants who did not use the VR headset during the session—either because of limited time or because they did not want to try it in front of the group—the opportunity to experience it afterwards.

5.3 Cross-Country Comparison and Key Findings

The findings from Slovenia and Austria show a consistently positive reception of the CDO-VR approach across both countries and both target groups, with average ratings ranging from 4.0 to 4.8 out of 5. Both countries reported that VR enabled participants to gain a more concrete understanding of occupational tasks and working environments than conventional presentation methods, while occupational preference patterns differed between the countries, reflecting differences in target groups and local contexts. A detailed comparative analysis, including the scope of implementation, contextual differences, methodological considerations and joint recommendations, is presented in Chapter 7.

6. Monitoring Increases in Interest in Deficit Occupations

This chapter examines whether and how participation in the CDO-VR activities contributed to increased interest in deficit occupations among pupils and adults. The analysis combines quantitative data from VR sessions, questionnaires and, where available, enrolment and employment-related data with qualitative feedback and observations from the workshops. Particular attention is given to participants' expressed interests, the occupations they explored in VR, their subsequent intentions and the extent to which these patterns correspond with existing labour market needs.

The available data differ between Slovenia and Austria and between the target groups. Therefore, the findings are presented separately for pupils and adults, while cross-country comparisons are made where comparable data are available. Where project-specific baseline or follow-up data are not available, the analysis does not attempt to establish causal effects but instead identifies observable patterns and indications of increased awareness, interest and motivation regarding deficit occupations.

6.1 Increase of Interest Among Pupils (data from schools)

6.1.1 Increase of interest among pupils - Slovenia

As part of the CDO-VR project evaluation, all 17 primary schools where creative workshops had been delivered were invited to provide data on the enrolment of 9th-grade pupils in upper secondary schools for the 2026/2027 school year. Data were received from four of the 17 schools. Data was obtained for 130 students (out of a total of 530 students from 17 schools who participated in the workshops). Comparative data from previous years was not available, making a direct baseline comparison impossible.

Classification. Programmes were classified as leading to deficit occupations based on the ZRSZ list of deficit occupations for 2026, the ZRSZ Occupational Barometer for 2026 and the public call for scholarships for deficit occupations for the 2026/2027 school year (388th public call).

Enrolment data

School	Total enrolments	Deficit occ. programmes	Share (%)
OŠ Mladika	47	17	36,2
OŠ Olge Meglič	53	17	32,1
OŠ Breg	24	6	25
OŠ Ljudevita Pivka*	6	6	100
TOTAL	**130**	**46**	**35,4**

** OŠ Ljudevita Pivka delivers an adapted educational programme for students with special needs.*

Of the 130 students covered, 46 (35,4%) enrolled in programmes leading to deficit occupations. Excluding OŠ Ljudevita Pivka (adapted programmes for students with special needs, where all 6 students enrolled in deficit occupation fields), the share was 32,3% (40 out of 124 students). The most frequently chosen deficit occupation programmes were healthcare/nursing (9 students), electrical engineering/electrician (8), car mechanic/car body repairer (8), IT technician (4), gastronomy/hospitality (4), mechanical technician (3), carpenter (2) and mechatronics technician (1).

Interest expressed during VR workshops

During the school workshops, students were free to choose which of the six deficit occupations they wanted to explore in the VR application. In the Slovenian workshops, the analysis of VR application data and evaluation questionnaires revealed that cook was the most frequently chosen and most popular VR profession, followed by care worker. This pattern is consistent with the Austrian results, where cook (183 out of 680 VR sessions), builder (141) and care worker (125) were the most frequently explored professions. When asked which VR experience they found the most interesting, however, Austrian students ranked electrician first (26,6%), followed by metal technician with welding (23,4%) and cook (18,8%).

The enrolment data from the four Slovenian schools broadly mirrors the interest patterns observed during the VR workshops. The strongest overlap between VR interest and actual enrolments is evident in healthcare/nursing, electrical engineering and gastronomy/hospitality - precisely the fields that the CDO-VR project promoted through its VR modules. This suggests that the workshops contributed to making these occupations more visible and tangible for students, even though enrolment decisions are shaped by multiple factors beyond project activities.

Qualitative feedback and observations

Teachers and school guidance counsellors who accompanied the workshops consistently highlighted the high level of student motivation and engagement, the practical and experiential character of the approach - which they described as a valuable complement to existing career orientation activities - and an expressed wish for continued cooperation and repeated delivery of workshops at their schools. The feedback confirms that the workshops were primarily intended for, and also successful in, raising the visibility of deficit occupations among students. VR technology enabled students to experience these occupations in an appealing, innovative and accessible way, lowering psychological barriers to considering career paths they might otherwise not have explored.

While a causal link between workshop participation and enrolment decisions cannot be established on the basis of available data, the combination of high participant satisfaction (average VR experience rating of 4.8/5), consistent qualitative feedback from teaching staff and the structural alignment between VR profession interest and actual enrolments supports the conclusion that the CDO-VR project made a meaningful contribution to raising awareness and broadening students' career horizons.

6.1.2 Increase of interest among pupils - Austria

The workshops received very positive feedback from the participants. Overall, 92.2% of the students rated the workshops with 4 or 5 stars, indicating a high level of satisfaction. Both girls and boys were interested in trying the VR environments, and interest in the different occupations was generally well

balanced. Based on observations during the workshops, girls appeared to choose the caregiving profession slightly more often than boys. However, no gender differences were observed in the willingness to use the VR headsets. The atmosphere during all workshops was very positive. Although some classes were initially hesitant to try the VR headsets, this changed quickly after the project facilitator demonstrated how to use them. Seeing their classmates enjoying the experience further increased participants' confidence and enthusiasm. Only a small number of students decided not to try the VR headsets. Some of the participating classes were inclusive classes, and approximately 12–15 students with special needs took part in the workshops. These students were supported by teaching assistants, who helped them use the VR headsets and participate in the activities.

Interest expressed during VR workshops

Students were free to choose which VR profession they wanted to explore. A total of 680 VR experiences were completed across the six occupations:

- Cook: 183
- Builder: 141
- Care worker: 125
- Electrician: 104
- Metal Technician: 74
- System Administrator: 53

These results show that all occupations attracted interest, with Cook, Builder, and Care worker being the most frequently selected VR experiences. When asked which VR experience, they found the most interesting, Electrician was the highest-rated occupation (26.6%), followed by Metal Technician with welding (23.4%) and Cook (18.8%). Builder was selected by 15.6% of the students, followed by Systems Administrator (12.5%) and Care worker (9.4%). 4.7% of the participants did not provide an answer.
More than 70 % of pupils say they learnt much (37.5%) or quite a lot (34.4%) of new things in the workshop. The VR experience is rated very positively by 85.5 per cent (4 or 5 stars).

Enrollment data

There is no project-specific quantitative data available of enrolments in secondary schools offering programmes leading to deficit occupations. But it is important to note that Austrian schools already offer a wide range of career guidance activities, particularly to address skills deficit s in many sectors and to encourage young people to explore careers beyond traditional gender stereotypes.
For example, Austria has many initiatives that encourage girls to discover opportunities in STEM (Science, Technology, Engineering and Mathematics) fields, where women are still underrepresented. At the same time, schools also promote a broader understanding of career choices, helping both girls and boys to consider professions that are not traditionally associated with their gender. This is especially important in sectors facing labour deficit s, such as technology, engineering, skilled trades, healthcare, and social care.

Qualitative feedback and observations

The project made a valuable contribution to these existing initiatives by offering something that is often difficult to achieve in traditional career guidance: real, hands-on experiences. Instead of only hearing or reading about different professions, students were able to explore them in a practical and

engaging way. They could try out typical tasks, use tools or equipment, and experience what working in these occupations might actually feel like.

The activities took place in a safe, supportive and low-pressure environment, allowing students to experiment without fear of making mistakes. This practical approach can help reduce uncertainty and lower the barriers that often prevent young people from considering unfamiliar career paths. A student who has never thought about becoming an electrician, a welder, a software developer, or a healthcare professional may become more open to completing an internship or even starting vocational training after experiencing these professions first-hand.

The project therefore helped broaden students' perspectives and encouraged them to make career choices based on their own interests and abilities rather than on stereotypes or preconceived ideas. This is particularly relevant in Austria, where many industries are looking for qualified young professionals and where widening the talent pool is essential for addressing future workforce needs.

Teachers also highly appreciated the project's accessible, practice-oriented and playful approach. They reported that students were highly motivated and actively engaged throughout the activities. The combination of learning by doing, curiosity and direct experience proved to be an effective complement to existing career guidance measures and created positive opportunities for students to discover new interests and talents.

6.2 Increase of Interest Among Adults

This section examines the interest of adult participants in deficit occupations and the extent to which the CDO-VR activities supported their career orientation and motivation to consider further employment, training or education opportunities. The analysis combines available quantitative data on participants' employment and training status with information on the occupations explored in VR, participants' feedback and observations from the counselling process.

As the availability and scope of monitoring data differ between Slovenia and Austria, the findings are presented separately for the two countries. Where project-specific data on subsequent employment, enrolment in training or occupational changes are not available, the analysis focuses on expressed interest, observed motivations and participants' identified next steps rather than attempting to establish direct changes in employment outcomes.

6.2.1 Increase of Interest Among Adults - Slovenia (ZRSZ)

Participant profile and employment status

Analysis of all 100 participants included in the VR workshop (on the day 10.8.2026):

- 6 people are currently included in training with employers,
- 5 people are currently included in educations trainings,
- 57 of them were unemployed (including 5 who had previously been employed after a period of unemployment but had since become unemployed again),
- 25 are currently employed and are no longer registered with ZRSZ (16 of them in shortage occupations),
- 7 have health or other issues.

Employment In deficit occupation	Employment In another field
3xelectrician 1xcatering 2xpainting 4xmanufacturer 1xIT 3xcleaning/care worker in hospital/nursing home 1xcnc metalwork 1xcnc woodwork	2x security guard 1x maid and hotel 1x clerk at the gas station 1x receptionist 2x logistician 1x casino cashier 1x social worker in elderly home (public work)

In the analysis we must consider that 55 participants that were included in this workshop were long term unemployed – which means, that they have same lacks in their career orientation (like no education, lower motivation, lower skills for job searching…).

VR-supported career orientation

Workshops for unemployed with VR at ZRSZ included career counseling before, during and after the VR experience. It was primarily aimed at informing unemployed people about the opportunities and advantages of working in deficit occupations in order to check whether we can use innovative methods to inspire unemployed people to work in deficit occupations and thus reduce structural disparities in the labour market.

The CDO-VR workshop was very interactive, with the aim of helping unemployed people discover in which areas they can quickly enter the labour market, because:

- they have the necessary competencies,
- there are many opportunities to enter the labour market and change jobs.

In addition to VR-glasses, the participants in the workshop also used a computer and phone to use applications and online information to define their strengths, learn about opportunities in the labour market, and review pages with current information, such as ZRSZ incentives, National Vocational Qualification ("NPK" - a nationally recognised certificate confirming an individual's occupational competences and skills), courses at local folk high schools, and the like.

For the purpose of monitoring participants in the counselling process, at the end of the workshop, unemployed people defined deficit occupations that best suit them, given their characteristics and competencies, what are the possibilities for progress in this or their career field, what are their goals, and what will be the next step in their career.

Observed outcomes, motivations and next steps

The analysis of the responses shows that the workshop encouraged participants to think about concrete further activities to improve their employment prospects. They most often mention active job search as their next step, which indicates a high level of readiness to enter the labour market. A significant proportion of participants also see their future path in completing their education, participating in training, learning languages, and gaining practical experience.

The results show that participants understand that successful employment requires a combination of active job search, competence development, and lifelong learning. Such an orientation is particularly important when integrating unemployed people into deficit occupations, where employers expect, in addition to motivation, appropriate knowledge, adaptability, and readiness for further training. The workshop thus contributed to greater activation of participants and encouraged the creation of concrete steps for more successful integration into the labour market.

What is important to consider is that deficit occupation demands special skills. Even for lower educated jobs (like builder, cook...) it is important that workers have the right knowledge and also personal characteristics and skills for this job. The lower-educated workforce has less competencies for job searching and planning their next career move. Workshops with VR-glasses have shown that people are interested in finding work - since most of them aim to get a job and learn new professions, but they do not have the competencies to learn new skills, or information about what kind of education to undertake in order to get a job in a next year. Instead of building their competencies for long term career, they stay among the unemployed.

The results confirm that VR-technology can be an effective support tool in the career orientation of unemployed people and job seekers especially at the level of information, motivation and exploration of occupations, as it enables a more experiential, interesting and inclusive learning about employment opportunities.

6.2.2 Increase of Interest Among Adults – Austria ISOP

VR experiences and expressed interest

During the workshops, young jobseekers were free to choose which professions they wanted to explore in the VR experience. This gave participants the opportunity to focus on occupations that matched their personal interests while also discovering new career paths they might not have considered before.
In total, 64 VR experiences were completed. The professions explored were distributed as follows:

- Care worker: 15
- Systems Administrator: 15
- Cook: 12
- Electrician: 8
- Builder: 8
- Metal Technician with welding: 6

After trying the different professions, participants were asked which one they liked best. The most popular occupations were:

- Electrician: 25%
- Metal Technician with welding: 20.8%
- Cook: 16.7%
- Builder: 15%
- Systems Administrator: 10%
- Care worker: 8.3%
- No answer: 4.2%

Participant feedback and perceived benefits

The workshops also received very positive feedback. Nearly 80% of participants said they had learned "a lot" or "very much" during the workshop, and 87.5% rated the workshop as "good" or "very good."
For people who are unemployed or considering a new career direction, it is essential to become familiar with as many career options as possible. Making informed career decisions is much easier when people have a realistic understanding of what a profession involves. Reading about a job or watching a video can provide information, but experiencing typical tasks in virtual reality creates a much clearer and more memorable impression.
This is where VR technology can make a real difference. By allowing participants to actively try out different professions in a safe and supportive virtual environment, it helps transform abstract ideas into concrete experiences. The opportunity to "experience" a job first-hand can increase confidence and make the next step, such as applying for an internship, a training programme or an apprenticeship, feel much more achievable.
This is especially important for young people looking for apprenticeships or their first job. Career guidance should not only help them identify their interests but also connect these interests with occupations that offer realistic employment opportunities. In Austria, many deficit occupations provide excellent prospects for vocational training and long-term employment.
By making these professions tangible, engaging and easy to explore, the project helped participants discover new possibilities and encouraged them to consider careers in sectors where skilled workers are urgently needed. In this way, the project can contribute both to better-informed career choices and to increasing interest in occupations that are essential for Austria's future labour market.

Employment status of participants and observed labour market trends

No project-specific data are available on subsequent employment in deficit occupations, enrolment in courses or training programmes, or occupational changes among the participants.
The available observations therefore focus on participants' expressed interests, motivations and identified next steps following the VR-supported career orientation activities.
Metalworking, electrical engineering and construction remain key labour deficit occupations in Austria. There is also a strong demand for qualified nurses, skilled workers in the hospitality sector (including cooks) and IT professionals such as system administrators. The Austrian Labour Market Service (AMS) continues to identify these sectors as having significant skills deficits.
Compared with the baseline survey at the beginning of the project, the number of open apprenticeship positions in the occupations of cook, electrician, metal technician and builder has decreased slightly. However, there is still a clear need for young skilled workers and apprentices in these occupations.

- Cook: High demand for skilled workers; apprenticeship vacancies remain available
- Metal technician with welding: One of Austria's largest apprenticeship occupations; continued labour deficit
- Electrician: The largest technical apprenticeship; demand remains high
- Builder: Ongoing deficit of skilled workers
- Care worker: Strong and persistent deficit of qualified staff across Austria
- Systems administration / IT: High demand for IT specialists, including systems administrators and network professionals

Interpretation and relevance of VR for career orientation

Making deficit occupations visible is essential to attracting young people to future career opportunities. Many young job seekers and people looking for training are not yet aware of the wide range of possibilities in technical professions, healthcare, construction, hospitality and IT.
Virtual Reality offers a valuable way to experience these professions in a realistic and engaging environment. By trying out different jobs virtually, young people can gain insights into daily tasks, working conditions and required skills before making a career decision.
This practical experience can increase interest, reduce uncertainty and help young people find a suitable career path. VR therefore supports better career orientation and can contribute to securing the skilled workers needed in Austria's deficit occupations.

7. Comparative Analysis Among Countries

This chapter presents a comparative analysis of the CDO-VR pilot activities in Slovenia and Austria. The analysis draws on the findings of the preceding chapters - in particular Chapter 5 (Analysis of User Feedback, Satisfaction and Perceived Learning) and Chapter 6 (Monitoring Increases in Interest in Deficit Occupations) - as well as the joint reports on workshops delivered in schools (O 3.2) and for unemployed persons (O 3.1). The comparison covers the scope of implementation, satisfaction and acceptance, perceived learning, interest in occupational profiles, contextual differences, and joint findings and recommendations.
The pilot activities in both countries took place during the period from 1 October 2025 to 31 March 2026. The evaluation instruments were designed as a unified framework, using a common five-point scale (1 - do not like / disagree, 5 - like very much / fully agree). Minor differences in the formulation of individual questions may have occurred during the translation of questionnaires into the respective languages. Despite this unified framework, the target groups, delivery formats and implementation contexts differ between the two countries, and direct numerical comparison is therefore meaningful only when these differences are taken into account. The comparison is thus intended to identify common patterns and complementary insights rather than to rank the results directly.

7.1 Scope and Structure of Implementation

7.1.1 School Workshops

Indicator	Slovenia	Austria
Number of schools	17 (primary schools)	15 (Mittelschule, Polytechnische Schule)
Implementation period	October 2025 - February 2026	November 2025 - March 2026
Number of participating pupils	530	308
Target group	predominantly 9th-grade primary school pupils	secondary school pupils
Workshop duration	2 teaching hours	3 teaching hours
Number of occupations presented	6	6

In both countries, the project target (15 school workshops per country) was met or exceeded. In Slovenia, 17 workshops were delivered at 17 schools (with additional repeat sessions at 11 schools), while in Austria exactly 15 workshops were delivered at 15 schools. In total, 838 pupils participated in the school workshops.
The set of six deficit occupations (Cook, Care worker / nursing, Electrician, Metal technician with welding, Builder and Systems administrator / technician) was identical in both countries, ensuring comparability of the experience and confirming the project's shared cross-border orientation.
The key structural difference lay in the delivery format: in Slovenia, workshops lasted 2 teaching hours and were organised as a station-based system with 5 stations (VR headsets, occupation stations, occupation box), requiring 3 to 5 facilitators; in Austria, workshops lasted 3 teaching hours and included an introductory group activity, individual VR headset use with the option of live screen projection, competence quizzes and a facilitated discussion.

7.1.2 Workshops for Unemployed Persons

Indicator	Slovenia	Austria
Implementation period	August 2025 - March 2026	October 2025 - March 2026
Number of workshops/events	22	5
Number of participants	100 (43 M / 57 F)	59 (36 M / 23 F)
Implementing institutions	ZRSZ, Regional Office Ptuj	Steirisches Jugendcollege, A Fit Südoststeiermark
Delivery format	individual, small and large groups	group workshops

The project target (100 unemployed persons in total) was exceeded by 59% - a total of 159 persons were included. In Slovenia, the workshops were integrated into the ZRSZ counselling process and included career counselling before, during and after the VR experience, as well as the use of a career

development handbook. In Austria, the workshops took place within the framework of active labour market policy measures and included structured group activities.
An important difference in the Slovenian sample is that 55 of the 100 participants were long-term unemployed, which entails specific challenges relating to motivation, lower levels of education and fewer job-search competences.

7.3 Satisfaction and Acceptance

7.3.1 School Workshops

Evaluation criterion	Slovenia	Austria
VR experience rating (1-5)	4.8	4.0 (schools) / 4.2 (unemployed)
Satisfaction / workshop rating (1-5)	4.5	4.5 (schools) / 4.4 (unemployed)

All ratings were collected using the same five-point scale (1-5). In both countries, pupils rated the VR workshops very positively. In Slovenia, the average VR experience rating was 4.8/5, while in Austria it was 4.0/5. The overall workshop rating was the same in both countries: 4.5/5.
In Austria, 92% of pupils gave the workshop a rating of 4 or 5 stars, while the corresponding figure in Slovenia was 94.9%.
The difference in the VR experience rating (4.8 in SLO vs. 4.0 in AT) does not necessarily indicate a difference in quality but may reflect differences in target groups (younger primary school pupils in SLO vs. older secondary school pupils in AT) or in the implementation context.

7.3.2 Workshops for Unemployed Persons

Evaluation criterion	Slovenia	Austria
VR experience / workshop rating (1-5)	4.4	4.4

The average satisfaction rating for the workshops for unemployed persons was identical in both countries: 4.4/5. In Austria, nearly 80% of participants indicated that they had learned "a lot" or "very much" during the workshop, and 87.5% rated the workshop as "good" or "very good". In Slovenia, 54 of the surveyed participants selected the use of VR headsets as the most engaging element of the workshop.

7.4 Perceived Learning and Career Awareness

A common finding in both countries was that VR enabled participants to gain a more concrete insight into occupational tasks and working environments, exceeding the informational value of conventional methods of presenting occupations.

In Slovenia, participants (both pupils and unemployed persons) reported the greatest learning gains in the area of competences and skills required for specific occupations, as well as relevant information about the working environment and the characteristics of deficit occupations. Observations during the workshops indicated active participant engagement, with frequent discussions about work tasks, working environments and aspects that participants found interesting.

In Austria, pupils rated the amount of new knowledge gained at 4.0/5 (schools) and 4.2/5 (unemployed). The live screen projection of the VR experience proved particularly effective, enabling participants to observe the virtual environment before using the headset themselves. This approach reduced initial hesitation and increased willingness to participate.

In Slovenia, the evaluation identified a noticeable gap between the experiential and the pedagogical component: a high level of enjoyment did not always lead directly to clear learning outcomes, suggesting scope for further content development of the VR simulations.

Across both countries, the evaluation suggests that the strongest potential of the CDO-VR approach lies not only in the novelty of VR technology itself, but in its ability to provide experiential exposure to occupational activities within a structured career guidance context. The combination of immersive virtual experience with facilitated discussion, reflection and - in the case of unemployed participants in Slovenia - individualised career counselling proved more effective than either component alone. This finding underscores the importance of embedding VR tools within a broader pedagogical and counselling framework rather than relying on the technology as a standalone intervention.

7.5 Interest in Occupational Profiles

7.5.1 Pupils

Occupation	Slovenia (primary schools)	Austria (secondary schools)
Cook	71%	18.8%
Care worker / nursing	43%	9.4%
Builder	32%	15.6%
Electrician	27%	26.6%
Metal technician with welding	18%	23.4%
Systems administrator / technician	16%	12.5%

The preference patterns differ substantially between the two countries. In Slovenia, Cook was dominant (71%), followed by Care worker / nursing (43%) and Builder (32%). In Austria, Electrician (26.6%) and Metal technician with welding (23.4%) ranked first, while Cook was in third place (18.8%). These differences may be attributable to several factors: different age groups (younger primary school pupils in SLO vs. older MS/PTS pupils in AT), local labour market contexts, participants' prior experiences or different methods of measuring preferences. The available data do not allow these factors to be isolated, and therefore explanations should be considered indicative rather than causal. Aggregate data on VR sessions in Austria (680 experiences) show that Cook was the most frequently selected for trial (183 sessions), but Electrician was rated the "most interesting" after the experience

(26.6%). This suggests a distinction between the initial appeal of an occupation and the perceived quality of the VR module.

7.5.2 Unemployed Persons

Occupation	Slovenia	Austria
Cook	46%	16.7%
Care worker / nursing	35%	8.3%
Builder	42%	15.0%
Electrician	36%	25.0%
Metal technician with welding	35%	20.8%
Systems administrator / technician	39%	10.0%

Among unemployed persons, the preference patterns also differ. In Slovenia, preferences were more evenly distributed across the occupations, while in Austria Electrician (25%) and Metal technician with welding (20.8%) stood out.

7.6 Impact on Enrolment and Employment Outcomes

7.6.1 Pupils Enrolment Data

In Slovenia, enrolment data were obtained for 130 pupils from four of the 17 schools. Of these, 46 (35.4%) enrolled in programmes leading to deficit occupations. The most frequently chosen deficit occupation programmes - healthcare/nursing (9 students), electrical engineering/electrician (8), car mechanic/car body repairer (8) and gastronomy/hospitality (4) - structurally correspond with the interest expressed during the VR workshops, suggesting that the workshops contributed to raising the visibility of these occupations.

In Austria, no project-specific enrolment data are available, which limits the possibility of direct comparison. Austrian schools already deliver a wide range of career guidance activities, and the CDO-VR project contributed an innovative experiential component to this existing framework.

In neither country is it possible to establish a causal link between workshop participation and subsequent enrolment decisions, as enrolment is influenced by numerous factors beyond project activities.

7.6.2 Employment Status of Unemployed Participants

In Slovenia, the analysis of all 100 participants (as of 10 August 2026) showed the following: 25 persons were employed (of whom 16 in deficit occupations), 6 persons were in employer-based training, 5 in education, 57 persons remained unemployed, and 7 had health or other limitations. Among those employed in deficit occupations, positions in manufacturing, electrical, hospitality and care sectors predominated.

In Austria, no project-specific data on subsequent employment, enrolment in training or occupational changes among participants are available.
In both countries, the findings suggest that VR technology is an effective support tool for the career orientation of unemployed persons, primarily at the level of information, motivation and exploration of occupations, rather than a direct instrument for securing employment.

7.7 Contextual Differences and Their Impact

Several contextual differences between the two countries affect the interpretation of results:
First, the target groups differ: in Slovenia, the school workshops involved 9th-grade primary school pupils (typically aged 14-15), while in Austria they involved pupils from Mittelschule and Polytechnische Schule (typically aged 14-16, closer to the transition to vocational education). This difference may explain the variation in occupational preferences - Austrian pupils, being closer to actual career choices, showed greater interest in technical occupations.
Second, the duration and format of the workshops differed (2 teaching hours / station-based system in SLO vs. 3 teaching hours / plenary and individual activities in AT), which influenced the depth of the experience and the scope of evaluation data.
Third, the evaluation instruments were designed as a unified framework (common five-point scale, comparable questions), but minor differences in formulations may have occurred during translation into the respective languages, which should be taken into account when directly comparing numerical results.
Fourth, the context of participation for unemployed persons differs: in Slovenia, workshops were integrated into the ZRSZ counselling process with an individualised approach, while in Austria they took place within institutional active labour market policy measures.

7.8 Data Limitations and Methodological Notes

1. Difference between number of participants and number of questionnaires: In Slovenia, 530 pupils participated in the school workshops, while the evaluation analysis is based on 505 and 512 completed questionnaires respectively. The difference results from the fact that not all participating pupils completed the questionnaires, which is to be expected in activities of this kind.
2. Different contexts for measuring occupational preferences: In Slovenia, preference percentages were measured as the share of pupils who selected each occupation (with the possibility of multiple selections), while in Austria they were measured as the share of pupils selecting a single favourite occupation. This directly affects the absolute values and the apparent differences between the two countries (e.g. Cook 71% in SLO vs. 18.8% in AT), and is a key methodological difference that must be taken into account when comparing preference patterns.
3. Differences in the scope of employment data: In Slovenia, detailed data on the employment status of all 100 participants are available, while in Austria no project-specific employment data are available, precluding a direct comparison of employment outcomes.

4. Differences in enrolment data: Enrolment data from Slovenian schools cover 130 of the 530 pupils (24.5%) from four schools, which represents a limited rather than a representative sample. In Austria, such data are not available.
5. Possible variations in the translation of evaluation instruments: The evaluation instruments were designed as a unified framework using a common five-point scale (1-5). Minor differences in the formulation of individual questions may have occurred during the translation of questionnaires into Slovenian and German, which may affect the comparability of certain results to a limited extent.

8. Joint Findings and Recommendations for further Activities

8.1 Summary of Key Findings

The CDO-VR project was implemented across Slovenia and Austria during the period from October 2025 to March 2026, reaching a total of 838 pupils in 32 schools and 159 unemployed persons through 27 workshop events. All quantitative targets were met or exceeded: the target of 15 school workshops per country was achieved in both cases (17 in Slovenia, 15 in Austria), and the target of 100 unemployed participants was exceeded by 59%.
The evaluation findings, presented in detail in Chapters 3 through 7, consistently point to the following key conclusions:

High level of acceptance and satisfaction. The VR-based approach to career orientation was rated very positively in both countries and among both target groups. Across the two countries, average workshop ratings ranged from 4.4 to 4.8 out of 5 on the common five-point scale. In Austria, 92% of pupils gave the workshop 4 or 5 stars, compared with 94.9% of pupils in Slovenia. These results confirm that VR is a suitable, welcome and effective tool for career guidance across different target groups and institutional contexts.

Experiential approach as a key advantage. In both countries, the experiential character of the VR workshops was recognised as the greatest added value compared with conventional methods of presenting occupations. Participants gained a more concrete insight into occupational tasks, working environments and required competences. The central principle of the project - that a career is easier to choose when you have experienced it first - was confirmed by participant feedback and workshop observations alike.

Effective engagement and motivation. The use of VR headsets served as a key motivational factor that encouraged active participation, reduced initial hesitation and stimulated interest in occupations that participants might not otherwise have considered. In Austria, the live screen projection proved particularly effective in supporting group learning and building confidence among initially hesitant

participants. In Slovenia, the station-based system with multiple activity formats ensured high levels of engagement throughout the workshop.

Positive indications of awareness-raising. While the evaluation does not establish a causal link between workshop participation and subsequent career decisions, the available evidence suggests a meaningful contribution to awareness-raising. In Slovenia, enrolment data from four schools showed that 35.4% of pupils enrolled in programmes leading to deficit occupations, with the most frequently chosen programmes structurally corresponding to the occupations promoted through VR. Among unemployed participants in Slovenia, 25 of 100 persons found employment by August 2026, of whom 16 were employed in deficit occupations.

Successful cross-border implementation. The project demonstrated that a shared VR application featuring six deficit occupations (Cook, Care worker / nursing, Electrician, Metal technician with welding, Builder and Systems administrator / technician) can be successfully deployed across two countries with different education systems, target groups and institutional frameworks, while allowing the implementation format to be adapted to local conditions and needs.

8.2 Assessment of Project Success in Relation to Objectives

The project pursued four core objectives, each of which was addressed through the pilot activities:

1. **Maintaining and expanding the use of VR as an innovative tool for career orientation and the promotion of deficit occupations.** The pilot implementation confirmed the technical feasibility and pedagogical effectiveness of VR in career guidance settings. The VR application was successfully deployed in 32 schools and 27 workshop events, with over 10,000 recorded VR sessions providing a robust evidence base.
2. **Increasing the visibility and attractiveness of deficit occupations among young people, unemployed persons and other target groups.** Participant feedback, workshop observations and available enrolment data all indicate that the workshops contributed to making deficit occupations more visible and tangible. The high satisfaction ratings and expressed interest in the occupational profiles confirm that VR technology can make these occupations more appealing and accessible.
3. **Promoting informed decision-making about educational and career pathways.** Participants in both countries reported gaining useful information about the competences, tasks and working environments associated with deficit occupations. For unemployed participants in Slovenia, the workshops were integrated into a structured career counselling process, and participants defined concrete next steps for their career development at the conclusion of each workshop.
4. **Fostering sustainable cross-border cooperation.** The project partnership of five organisations successfully developed and delivered a joint VR-based career orientation model, trained 53 professionals and established three CDO-VR centres that will continue to operate beyond the project period.

8.3 Identified Gaps and Risks

The evaluation also identified several areas requiring attention:

- Content depth of VR simulations: Participants in both countries expressed a desire for more detailed occupational tasks, a wider range of occupations and greater variety within the VR experience. In Slovenia, the evaluation identified a gap between the high level of enjoyment and the clarity of learning outcomes, suggesting scope for further pedagogical development of the VR modules.
- Technical refinements needed: The VR application analytics revealed specific issues, including a high number of abandoned sessions in the Builder module (indicating onboarding difficulties), safety procedures being skipped in the Electrician module, and CNC tasks in the Metal technician with welding module requiring additional guidance. Reference completion times require recalibration for several modules.
- Limited use of the built-in help function: Across the entire dataset, help function usage was statistically insignificant - users were more likely to abandon a task than to request in-application assistance. This indicates a need for more proactive guidance within the VR environment.
- Data availability asymmetry: The evaluation was constrained by differences in the availability of outcome data between the two countries. In Austria, no project-specific enrolment or employment data were available, limiting the scope of cross-country comparison on longer-term impacts.
- Sustainability of the VR application: The current VR application represents a specific version that will require technical maintenance and potential updates. The continued availability and functioning of the application depends on the technical support commitment of Art Rebel 9 d.o.o., as set out in the Joint Declaration.

8.4 Joint Strategy and Commitments of the Project Partners

The project partners have developed a joint strategy for the continued use and further development of the project results, formalised in the Joint Declaration on the Use of CDO-VR Project Results (*Skupna izjava o uporabi rezultatov projekta CDO-VR / Gemeinsame Erklärung zur Nutzung der Projektergebnisse CDO-VR*). The Declaration is signed by all five project partners and constitutes a binding commitment to the sustainable use of project outcomes beyond the funding period.

The key commitments set out in the Joint Declaration include:

- Enhanced counselling activities: All partners commit to continuing career guidance and promotion of deficit occupations using the shared methodological approach developed within the project, drawing on trained counsellors with expertise in employment policy and training opportunities in deficit occupations.
- Continued use of the VR tool: The partners commit to the systematic use of the VR application for occupational presentations, providing experiential insights into real working environments and employing the tool as a supportive (not selective) element of career guidance.

- Institutional integration: Each partner organisation commits to integrating the CDO-VR approach into its regular operations - Art Rebel 9 through technical support for the VR application, ISOP through integration into vocational guidance programmes, Ljudska univerza Ptuj through adult education and youth workshop activities, nowa through operational activities and model dissemination, and ZRSZ through integration into regular counselling and career orientation services for unemployed persons and school partnerships.
- Continued operation of CDO-VR centres: The partners commit to ensuring the sustainability of the three CDO-VR centres established during the project, which will continue to serve as supportive environments for career orientation, promotion of deficit occupations and the use and further development of the tools, materials and innovative approaches developed within the project.
- Sustainability and financing: The partners commit to actively seeking additional funding sources (Interreg, Erasmus+, ESF, national calls, …) and to integrating the project results into future projects and regular organisational activities.
- Accessibility and transferability: The joint strategy and project documentation will be publicly available on the partners' websites. The CDO-VR approach is designed to be transferable to other organisations and contexts, with the VR application available for use and installation support provided by Art Rebel 9.
- The full text of the Joint Declaration is available as a separate bilingual document (Slovenian/German).

8.5 Recommendations for Future Development

Based on the combined evaluation findings from both countries, the following recommendations are formulated for the future development and scaling of the CDO-VR approach:

Content and technical development: Expand the range of occupational profiles beyond the current six, develop more detailed and varied occupational tasks within each simulation, recalibrate reference completion times based on the pilot data, introduce more proactive in-application guidance (particularly for technically demanding modules) and address the identified onboarding issues in the Builder module.

Implementation and delivery: Ensure sufficient workshop duration for meaningful VR engagement (minimum 2-3 teaching hours), provide adequate facilitator support throughout the activity (3-5 facilitators recommended for station-based formats), create appropriate physical spaces for safe VR use, and integrate VR workshops into broader career guidance programmes rather than delivering them as standalone events.

Evaluation and monitoring: Harmonise evaluation instruments across countries and target groups to enable more robust cross-country comparison, establish standardised methods for measuring occupational preferences (single-choice vs. multiple-choice), develop follow-up mechanisms to track longer-term impacts on career decisions and employment outcomes, and ensure systematic collection of enrolment and employment data in all participating countries.

Scaling and sustainability: Leverage the established CDO-VR centres as permanent infrastructure for ongoing career orientation activities, explore partnerships with additional schools, employment services and vocational training institutions, pursue cross-border funding opportunities for further development and scaling, and share the open-access VR application and methodology with interested organisations beyond the current partnership.

9. Annexes

- Surveys, questionnaires, rubrics used
- Additional tables or graphs (if appropriate)
- Documentation from schools and partners (as needed)

Note on the use of artificial intelligence: AI tools were used in a supporting role during the preparation of this document, in particular for structuring, language editing and improving readability. The content of the document is based on the work, expertise and contributions of the authors. The development of substantive solutions, expert findings and conclusions was not delegated to AI tools. All texts prepared with the use of AI were reviewed, revised and verified for content by the authors.