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REPORT
on the selection of skill simulators for the training of autistic individuals

Leader Partner: Learn Virtual Europe

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Introduction

In this work package, our task is to identify simulation-based solutions that align with the needs of autistic individuals and to examine how these solutions can be effectively integrated into vocational education, training centres, and specialized learning environments. The objective is not only to evaluate available technologies but also to assess their potential to support inclusive, learner-centred vocational pathways that lead to meaningful employment outcomes.

A high-quality simulation is technologically reliable, accurate, and resilient to external disturbances. From an educational perspective, it supports gradual skill acquisition, independent learning, immediate feedback, and the development of vocational competencies in a safe and controlled environment. Furthermore, effective simulations can be integrated into existing educational frameworks while offering long-term economic benefits by reducing material consumption, equipment wear, and operational risks.

The findings of Work Packages 2 and 3 provide important context for this selection process. In particular, the WP3 report highlights that autistic individuals do not constitute a homogeneous group and that assumptions regarding preferred career pathways should be approached with caution. Rather than focusing exclusively on STEM-related occupations, the report advocates a personalized approach that takes into account individual interests, strengths, support needs, and potential co-occurring challenges. It also emphasizes the importance of creating inclusive learning and working environments that accommodate diverse cognitive styles and preferences.

Building on the findings of WP2, we recognize that autistic individuals possess a wide range of talents and interests extending beyond commonly cited occupational stereotypes. By acknowledging this diversity, vocational education providers can offer a broader spectrum of career pathways and develop training environments that accommodate different learning styles, sensory profiles, and vocational aspirations.

Based on these considerations, this report proposes a simulation-supported vocational training framework that prioritizes structured learning pathways, predictable learning environments, gradual progression, and individualized skill development. These principles form the foundation for selecting vocational simulators that can effectively support autistic learners in their transition from training to employment.

The Role of Skill Simulators in Education

Extended Reality (XR), Virtual Reality (VR), and simulation technologies are becoming increasingly important within vocational education and training. Their application is particularly widespread in technical and practical occupations where learners must develop procedural knowledge, motor skills, spatial awareness, and occupational safety competencies before working with real equipment.

Research and industry experience demonstrate that simulation technologies can improve training quality while reducing costs, material waste, and workplace risks. Their adoption is particularly evident in sectors involving welding, machinery operation, transport, logistics, surface coating, vehicle maintenance, laboratory work, and manufacturing processes.

Traditionally, the implementation of simulation technologies has been driven by industry demand for increased productivity, improved quality standards, enhanced safety performance, and more efficient training methods. As a result, simulation-based learning has become increasingly common in areas such as welding, logistics operations, heavy machinery operation, vehicle driving, laboratory training, and technical maintenance.

In the context of autism-inclusive vocational education, simulation technologies offer additional advantages. Simulators provide highly structured learning experiences, predictable environments, repeatable exercises, and clear feedback mechanisms. These characteristics can be particularly beneficial for learners who prefer clear expectations, gradual progression, and opportunities for repeated practice without the pressures often associated with real-world training environments.

A high-quality vocational simulation should satisfy several essential criteria:

Technological Reliability

A simulation must be technologically reliable, accurate, and stable during operation. Tracking systems, control interfaces, and feedback mechanisms should function consistently and be resistant to environmental interference. Reliable operation minimizes learner frustration and ensures that educational outcomes are based on actual skill development rather than technological limitations.

Pedagogical Structure

An effective simulation must incorporate a well-designed learning methodology rather than merely offering an immersive experience. Learning tasks should progress from simple to complex activities, supported by instructional guidance, performance

feedback, and assessment mechanisms. The goal is to facilitate the gradual development of vocational competencies and confidence.

Support for Independent Learning

Simulation-based learning environments should encourage learner autonomy and reduce dependence on constant instructor supervision. Effective simulators enable learners to practise repeatedly, learn at their own pace, and receive immediate feedback. This approach supports individualized learning pathways while improving the efficiency and scalability of vocational training programmes.

Integration into Educational Practice

Simulation technologies should be easily integrated into existing vocational curricula. Providers should offer implementation support, instructor training, and assessment tools that enable educators to monitor learner progress. Well-designed simulation systems contribute meaningfully to competency-based education and support evidence-based assessment practices.

Financial Sustainability

The value of a simulation system extends beyond its purchase price. Educational institutions must consider maintenance costs, software updates, training requirements, equipment longevity, and operational reliability. Sustainable simulation solutions provide long-term educational and economic benefits while maintaining predictable operating costs.

In summary, a good vocational simulator is not only a technologically advanced tool but also a carefully designed educational system that effectively supports learning, assessment, inclusion, and workforce preparation.

Professions Supported by Simulation

As part of Work Package 3, we selected professions that align with the objectives of the project and the vocational simulation opportunities available within the Metautism training ecosystem. A joint decision was made regarding which professions would be supported through simulation-based learning. The selected professions share characteristics that can support autistic learners, including structured workflows, predictable procedures, visual guidance, repeatable practice, and opportunities for gradual skill development.

Welding

Welding simulations enhance fine motor skills, concentration, and precision. Learners can safely practise complex techniques before using real equipment. Welding requires attention to detail, consistency, and adherence to procedures,

characteristics that often align with the strengths of autistic individuals. The structured nature of welding work and its clearly defined performance criteria can contribute to successful employment outcomes.

Professional Painting and Surface Coating

Industrial and vehicle painting requires accuracy, patience, and careful observation of surfaces, materials, and application methods. Simulation training allows learners to practise repeatedly without material waste while receiving clear visual feedback. The profession follows structured procedures and quality standards, creating a predictable working environment.

Warehouse Logistics

Warehouse logistics involves organisation, inventory management, workflow sequencing, and process awareness. Learners develop an understanding of logistics operations through structured tasks that reward accuracy and consistency. These activities can support autistic learners who prefer clearly defined procedures and systematic work.

Forklift Operations

Forklift operation provides training in material handling, transportation, and loading procedures. Simulation enables repeated practice without risk to people, goods, or equipment. The profession relies on safety rules, routine-based tasks, and spatial awareness, making simulation particularly valuable for skill acquisition.

Truck Driving

Truck driving requires responsibility, route planning, procedural compliance, and commitment to routines. Many autistic individuals appreciate the predictability of structured schedules and independent work. Through simulation, learners can gradually develop confidence in vehicle handling, loading procedures, and eco-driving techniques.

Crane and Heavy Load Operations

Operating cranes and managing heavy loads requires patience, concentration, precision, and continuous application of safety protocols. Simulation allows learners to master complex manoeuvres in a controlled environment before progressing to real equipment. The structured nature of the work can support learners who perform best with clear procedures and predictable outcomes.

Agricultural Machinery and Tractor Operations

Tractor and agricultural machinery operators perform routine tasks requiring concentration, vehicle control, and procedural accuracy. Simulation provides learners

with a safe opportunity to develop confidence and operational skills before entering real agricultural environments. The profession often involves independent work and clearly defined responsibilities.

Chemistry Laboratory Technician

Laboratory work demands precision, observation skills, and strict adherence to protocols. Learners can safely explore laboratory environments, equipment, and experimental procedures through simulation before working with real substances. The structured and rule-based nature of laboratory practice can be particularly suitable for autistic learners.

Car Mechanics

Automotive maintenance and repair require analytical thinking, systematic diagnostics, and step-by-step problem solving. Simulation enables learners to become familiar with workshop environments and maintenance procedures while building technical confidence. The profession rewards logical thinking and careful adherence to procedures.

CNC Machining Basics

CNC machining introduces learners to computer-controlled manufacturing processes and precision engineering. The profession requires understanding of standardized procedures, technical logic, measurement, and accuracy. These characteristics can align well with the strengths of autistic learners who prefer structured and predictable work environments.

The selected professions represent a diverse range of opportunities across manufacturing, transport, logistics, agriculture, maintenance, and laboratory work. All have been chosen because they can be effectively supported through simulation-based learning while providing structured vocational pathways that may assist autistic learners in transitioning successfully into education, training, and employment.

Professional Criteria for Selecting Simulators Used in the Project

The objective of this project was to identify, analyse, and compare simulation-based training systems that can effectively support vocational education for autistic learners. The review focused on simulation technologies used across a range of professions represented within the Metautism training ecosystem, including welding, professional painting and surface coating, warehouse logistics, forklift operations, truck driving, crane operation, agricultural machinery, chemistry laboratory work, car mechanics, and CNC machining. These vocational fields have been selected because they offer structured learning pathways and can benefit significantly from simulation-supported training. [training.m...tautism.eu]

Today, vocational sectors such as manufacturing, transport, logistics, agriculture, and technical maintenance face considerable workforce shortages throughout Europe. At the same time, traditional practical training often presents significant challenges. These include high operating costs, safety risks, limited opportunities for repeated practice, difficulties in measuring learner performance, and challenges in providing individualized instruction.

Recent advances in Extended Reality (XR), Virtual Reality (VR), and simulation technologies provide new opportunities to address these challenges. Simulation-based learning environments allow learners to practise procedures repeatedly in safe and controlled settings while reducing material consumption, equipment wear, and training costs. They also provide instructors with valuable performance data and create opportunities for personalized learning experiences.

When evaluating the suitability of simulation systems for autistic learners, we considered both general vocational education requirements and autism-specific educational considerations. Rather than focusing solely on technical performance, we examined how each simulation could support structured learning, accessible instruction, independent practice, and positive learner experiences.

The following criteria served as guiding principles throughout the evaluation process.

Gradual Progression

Effective simulation systems should enable learners to progress through clearly defined learning stages at their own pace. Each task should build upon previously acquired knowledge and skills while allowing learners to revisit earlier stages whenever necessary.

This approach is particularly important for autistic learners, who may require additional processing time, repeated exposure to new concepts, or increased predictability before progressing to more complex tasks. Clearly visible progress indicators, structured learning pathways, and achievable short-term goals can contribute to increased confidence, motivation, and learner autonomy.

Quality of the Evaluation System

A high-quality evaluation system provides transparent, objective, and constructive feedback. Rather than focusing primarily on errors, effective feedback mechanisms support continuous improvement and skills development.

For autistic learners, evaluations linked to observable actions and measurable outcomes are often easier to understand than abstract assessments. Visual indicators, performance scores, progress tracking, and clearly communicated improvement suggestions can reinforce motivation while reducing uncertainty and anxiety.

In addition, effective assessment systems should support learner reflection and encourage self-monitoring of progress over time.

Modularity

Modular learning systems allow educators to adapt training pathways according to individual needs, strengths, and interests. Individual modules can be completed independently, repeated when required, or introduced in different sequences.

This flexibility supports personalized learning pathways and enables educators to scaffold skill development gradually. Modular systems are also more sustainable because new content can be added over time without requiring major changes to the overall learning environment.

Gamification Features

When implemented appropriately, gamification can increase learner engagement and motivation. Features such as progress levels, achievements, rewards, and performance tracking can make repetitive training activities more engaging and meaningful.

For autistic learners, gamification should emphasize positive reinforcement rather than competition. Reward systems should remain simple, predictable, and customizable to individual preferences. The primary objective should always be supporting learning outcomes rather than creating unnecessary pressure or overstimulation.

Visualization

The visual quality of a simulation has a significant effect on accessibility and learner experience.

A well-designed simulation should provide clear and organized visual information while minimizing distractions. Navigation, instructions, equipment, and environments should be presented consistently and predictably. Excessive animations, visual clutter, or rapidly changing effects can create unnecessary cognitive load and should therefore be avoided whenever possible.

Customizable visual settings further improve accessibility by allowing learners to adjust brightness, contrast, colour schemes, or environmental complexity according to their individual preferences.

Nature and Strength of Developer Support

Long-term educational value depends heavily on the quality of support provided by simulation developers.

Reliable technical support, regular software updates, user documentation, and responsiveness to educational needs contribute significantly to successful implementation. Developers who actively collaborate with educators and incorporate user feedback are more likely to deliver inclusive and sustainable learning solutions.

Support for customization and content adaptation is particularly valuable when working with diverse learner populations.

Resource Requirements

Educational institutions vary significantly in their technological capacities. Consequently, simulation systems should operate efficiently without requiring excessively powerful hardware or complicated infrastructure.

Solutions that can function on standard educational computers, support multiple devices, or utilize cloud-based deployment models are generally more accessible and scalable. Lower resource requirements can also increase adoption in rural, remote, or financially constrained educational environments.

Installability and Deployment Flexibility

The ability to deploy simulation systems in different educational environments increases their practical value.

Portable systems, straightforward installation procedures, and flexible licensing structures enable simulations to be used in classrooms, training centres, workshops, therapy settings, and home-learning environments. Such flexibility is particularly beneficial for autistic learners, who may perform better in familiar and less stressful surroundings.

Simple implementation procedures also reduce barriers for educators and institutions.

Environmental Calmness

Simulation environments should be designed with sensory sensitivity in mind.

Excessive noise, sudden sounds, distracting background activity, or rapidly changing visual effects may reduce concentration and increase stress. Effective simulations provide calm, predictable, and adjustable environments that allow learners to focus on learning objectives.

Providing control over audio volume, visual stimulation levels, and environmental settings can significantly improve accessibility and learner comfort.

Teacher Openness

Successful implementation depends not only on the technology itself but also on the willingness of educators to adopt and effectively utilize it.

Educators who demonstrate openness towards innovation are more likely to explore the full capabilities of the simulation and adapt its use to individual learner needs. Professional development opportunities, knowledge sharing, and collaborative implementation strategies can further strengthen teacher engagement and confidence.

Expected Teacher Expertise During Training

Simulation systems should be accessible to educators with varying levels of technical expertise.

Clear instructions, intuitive interfaces, and straightforward operation enable educators to focus on teaching rather than troubleshooting technology. While advanced features may be available for experienced users, core functions should remain easy to understand and implement.

Additional value is created when trainers are able to customize training scenarios and adapt learning pathways according to their own professional practices and teaching methodologies.

Excludability of Hazards During Training

One of the major advantages of simulation-based learning is the ability to provide practical experience while minimizing risks.

Simulation environments allow learners to practise potentially hazardous procedures without exposure to physical danger, damage to equipment, environmental risks, or costly mistakes. They also support psychological safety by providing opportunities for repeated practice without fear of failure or negative consequences.

The ability to pause, restart, or repeat training scenarios further enhances learner confidence and supports individualized learning.

Cost Savings Compared to Traditional Education

Although simulation technologies often require significant initial investment, they can provide considerable long-term savings.

Simulation-based training reduces the consumption of raw materials, fuel, chemicals, protective equipment, and maintenance resources. It can also decrease instructor workload while increasing training capacity and consistency.

Additional benefits include reduced accident rates, faster skills acquisition, more efficient assessment processes, and increased training flexibility.

Environmentally Friendly Technology

Sustainability represents an increasingly important consideration in vocational education.

Simulation systems reduce the need for consumable materials and minimize waste generated during practical training. In professions such as welding, painting, transportation, laboratory work, and machinery operation, simulation can significantly reduce energy consumption, emissions, chemicals, metals, plastics, fuels, and other resources typically used during training activities.

By reducing environmental impact while maintaining educational effectiveness, simulation technologies contribute to broader sustainability goals.

Support for Motor Coordination Development

Many vocational professions require the development of fine and gross motor skills.

Simulation systems equipped with realistic controls, motion tracking, haptic devices, steering systems, joysticks, or specialized interfaces provide opportunities for repeated motor practice in safe environments. This supports the development of coordination, precision, spatial awareness, and confidence while allowing learners to progress at their own pace.

Such opportunities can be particularly valuable for autistic learners who may benefit from structured motor skill development.

Ease of Use

User-friendly design is essential for both learners and educators.

Interfaces should be intuitive, predictable, and easy to navigate. Instructions should be concise and clearly presented, while help functions and tutorials should be easily accessible. A well-designed interface supports independence, reduces frustration, and allows users to focus on learning objectives rather than operational complexity.

Ease of use is particularly important when introducing learners to unfamiliar technologies.

Rental or Purchase Options

Flexible acquisition models increase accessibility and support broader adoption.

Institutions differ significantly in their financial resources, training volumes, and long-term plans. The availability of both rental and purchase options allows organizations to select solutions that best match their operational needs.

Rental models can support pilot projects and evaluation activities, while purchase options may provide better long-term value for institutions with ongoing training requirements.

Conclusion

These criteria should not be viewed as rigid requirements but rather as a professional framework for evaluating simulation-based learning systems. In practice, trade-offs will often exist between different criteria. For example, highly customizable solutions may require greater technical resources, while low-cost systems may offer fewer advanced features.

The most effective simulation environments are those that achieve an appropriate balance between technological capability, educational effectiveness, accessibility, sustainability, and learner support. By applying these criteria consistently, vocational education providers can make informed decisions when selecting simulation tools that support both educational quality and the diverse needs of autistic learners.

Selection Process

The selection process was built upon the collective expertise and practical experience of the project consortium. Throughout the project meetings, partners contributed their knowledge of vocational education, simulation technologies, autism-inclusive training practices, and labour market needs. This collaborative approach ensured that the selected simulation systems addressed both professional training requirements and the specific support needs of autistic learners.

To identify the most suitable simulation solutions, we first mapped the available high-quality simulation systems within each professional field represented in the project. The analysis focused on professions supported by the Metautism training ecosystem, including welding, professional painting and surface coating, warehouse logistics, forklift operations, truck driving, crane operation, agricultural machinery, chemistry laboratory work, car mechanics, and CNC machining.

Each simulator was then evaluated against the criteria described in the previous chapter. While all criteria contributed to the final assessment, particular emphasis was placed on the following factors:

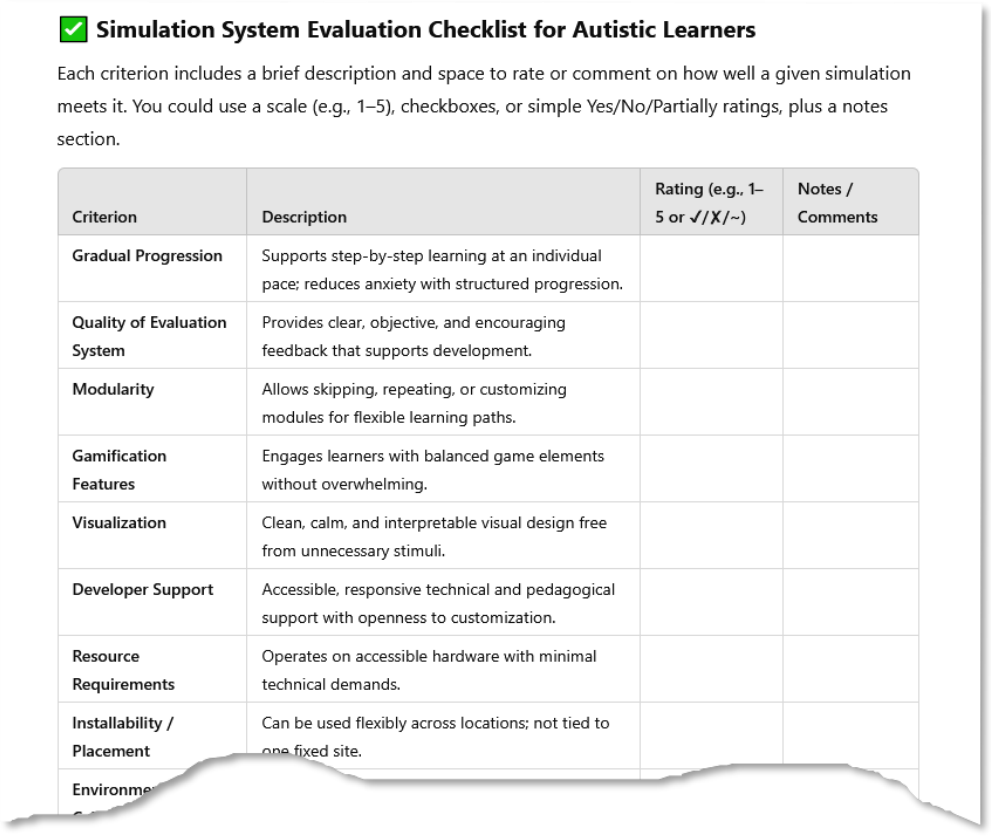
- Gradual Progression
- Quality of the Evaluation System
- Modularity
- Gamification Features

- Visualization

These criteria received additional weighting because they directly affect learner engagement, skill acquisition, comfort, and long-term training success for autistic learners.

Each simulation solution was scored using a standardized evaluation rubric. This allowed the consortium to compare systems consistently across different vocational domains while balancing pedagogical value, technological quality, accessibility, sustainability, and implementation requirements.

Particular support was provided by educational institutions and vocational training providers with extensive practical experience in simulation-based learning. Their feedback contributed significantly to understanding how different simulation systems function in real educational environments and how they can be adapted to support diverse learner populations effectively.



✅ **Simulation System Evaluation Checklist for Autistic Learners**

Each criterion includes a brief description and space to rate or comment on how well a given simulation meets it. You could use a scale (e.g., 1–5), checkboxes, or simple Yes/No/Partially ratings, plus a notes section.

Criterion	Description	Rating (e.g., 1–5 or ✓/✗/~)	Notes / Comments
Gradual Progression	Supports step-by-step learning at an individual pace; reduces anxiety with structured progression.		
Quality of Evaluation System	Provides clear, objective, and encouraging feedback that supports development.		
Modularity	Allows skipping, repeating, or customizing modules for flexible learning paths.		
Gamification Features	Engages learners with balanced game elements without overwhelming.		
Visualization	Clean, calm, and interpretable visual design free from unnecessary stimuli.		
Developer Support	Accessible, responsive technical and pedagogical support with openness to customization.		
Resource Requirements	Operates on accessible hardware with minimal technical demands.		
Installability / Placement	Can be used flexibly across locations; not tied to one fixed site.		
Environme			

The result of this process is the following list of recommended simulation tools.

Simulation Tools Overview

Profession	Simulator	Description
Welding	Wave NG zSpace Welding Motion Learning System	An entry-level flat-screen simulator focused on developing motor coordination, concentration, movement accuracy, and fundamental welding skills. Suitable as a preparatory tool before immersive simulator training.
Welding	Apolo WeldTrainer	A professional VR welding simulator providing real-time feedback, multiple welding processes, and detailed performance evaluation for vocational training.
Professional Painting and Surface Coating	SimSpray Professional Painting Simulator	A VR-based training system that teaches coating, spray painting, and surface finishing techniques with detailed performance analytics and visual feedback.
Warehouse Logistics	Warehouse Logistics Training Simulator	A warehouse simulation environment covering receiving, storage, picking, loading, workflow management, and operational procedures.
Forklift Operations	Forklift Operations Simulator	A simulator that develops safe material handling skills, manoeuvring techniques, warehouse operations competencies, and load management procedures.
Truck Driving	Truck Driving Simulator	Supports driver training through realistic transport scenarios, trailer operation, loading procedures, route planning, and eco-driving exercises.
Crane and Heavy Load Operations	Crane Lorry Simulator	Trains learners in precision load handling, lifting operations, spatial awareness, and safety procedures through progressive simulation tasks.
Agricultural Machinery and Tractor Operations	Tractor Simulator	Provides realistic agricultural training activities including machinery operation, vehicle control, navigation, and work planning.
Chemistry Laboratory Technician	MIMBUS Discover Chemistry	Introduces laboratory procedures, personal protective equipment, experimental workflows, and safe handling of laboratory materials.
Car Mechanics	MIMBUS Discover Car Mechanics	Familiarizes learners with workshop environments, diagnostics, maintenance procedures, tool usage, and vehicle servicing operations.

CNC Machining Basics	CNC Basics Simulator	Provides an introduction to computer numerical control machining, machine operation principles, measurement processes, and manufacturing workflows.

Moving Onward

Building Foundational Skills Before Occupational Training

Based on the experience and recommendations of the project consortium, simulation-based vocational training should begin with the development of fundamental competencies before progressing to profession-specific activities.

The first stage should focus on concentration, attention, motor coordination, and procedural learning. For many autistic learners, a gradual introduction to simulation technology provides opportunities to build confidence while becoming familiar with structured digital learning environments.

Where available, flat-screen simulations should be used as an entry point before introducing immersive XR or VR environments. Flat-screen systems generally require less cognitive and sensory effort while allowing learners to spend longer periods practising without fatigue.

This gradual approach enables learners to develop essential skills before advancing to more demanding and profession-specific simulation environments.

Developing Concentration and Motor Coordination

Concentration and motor coordination are core competencies required in virtually all vocational professions represented within the project.

Simulation systems that focus on movement precision and procedural accuracy provide measurable opportunities for tracking learner development while supporting continuous improvement. The ability to repeat exercises multiple times without material consumption or safety concerns is particularly valuable for learners who benefit from repetition and predictable learning routines.

For example, in welding education, an introductory movement-training simulator can effectively prepare learners for later work with fully immersive welding simulations. Similar progression pathways can be applied to many other professions represented within the project.

The project therefore recommends that learners begin with foundational skill-development simulations whenever such solutions are available before progressing to occupation-specific training.

The Principle of Gradual Progression

Whenever possible, simulation-based learning should begin in a flat-screen environment and progress gradually towards more immersive XR experiences.

This progression allows learners to build familiarity, confidence, and technical competence while minimizing cognitive overload. It also offers significant flexibility, as learners can spend more time practising individual tasks before advancing to increasingly complex training scenarios.

Immersive XR environments often provide highly realistic experiences; however, they may also increase cognitive load and sensory demands. As a result, introducing immersive technologies gradually can improve learner comfort and increase training effectiveness.

Where a flat-screen version is unavailable, VR training may be introduced directly, but additional preparation, structured support, and longer adaptation periods are recommended.

Sustainability and Long-Term Benefits

The broad integration of simulation-based learning contributes significantly to the sustainability of vocational education systems.

Simulation reduces the consumption of raw materials, fuel, chemicals, metals, paints, laboratory resources, and other consumables traditionally required for practical training. In addition, fewer training-related accidents occur because learners can practise hazardous procedures in controlled digital environments before working with real equipment.

This approach also supports environmental sustainability by reducing waste and emissions while increasing the efficiency of educational processes.

For autistic learners, simulation-based training provides an additional advantage by allowing procedures to be repeated as often as necessary without creating significant additional costs for institutions. Individualized pacing can therefore be supported without negatively affecting training quality, safety, or financial sustainability.

Special attention should be given to occupational safety training. Simulation offers valuable opportunities for introducing hazard awareness, risk assessment, and protective procedures in a controlled setting before learners enter real-world environments.

Conclusion

In alignment with the findings of Work Package 2 and the project partner consultations, Work Package 4 identified simulation technologies that support vocational pathways represented within the Metautism training ecosystem, including welding, professional painting and surface coating, warehouse logistics, forklift operations, truck driving, crane operation, agricultural machinery, chemistry laboratory work, car mechanics, and CNC machining.

The analysis confirms that simulation-based training offers autistic learners a safe, structured, and effective pathway into vocational education and employment. By providing predictable learning environments, repeatable tasks, clear feedback mechanisms, and opportunities for individualized progression, simulation technologies support both skills development and learner confidence.

The project strongly recommends the principle of gradual progression whenever possible. Flat-screen simulations should serve as an introductory stage, enabling learners to develop concentration, motor coordination, procedural understanding, and confidence before transitioning to more immersive XR environments. Such an approach can help reduce cognitive overload and support long-term engagement.

At the same time, simulation should complement rather than replace real-world practical experience. The most effective vocational pathways combine simulation-based learning with supervised practical training, enabling learners to transfer competencies gradually from virtual to real environments.

For autistic learners, successful transition often requires additional practice time, structured support, and carefully planned progression pathways. Adequate preparation for workplace safety, environmental awareness, and profession-specific procedures is therefore essential.

When appropriately selected and implemented, simulation technologies can contribute to more inclusive, sustainable, cost-effective, and learner-centred vocational education systems while supporting successful transitions into employment and lifelong learning.

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