PROJECT RESULT 2 - GUIDEBOOK

VR VOLL

Virtual Reality

For

Vocationally Oriented Language Learning

Project ID: KA220-VET-73E654DE

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1. This Guidebook

This guidebook is designed to provide educators, trainers, and curriculum developers with comprehensive insights into creating and implementing immersive, interactive, and contextually relevant VR scenarios tailored to vocational education and training (VET). Through the examples and guidelines presented, we aim to inspire innovative teaching practices and demonstrate the transformative potential of virtual reality in enhancing language proficiency and professional skills.

1.1 Overview

This guidebook is the second project result (PR) of the VR- VOLL Erasmus+ Project. It is created to serve as both pedagogical and technical manual for the target groups and end users exploring the possibilities of using the cutting-edge digital technology, VR, within vocational language learning.

The former encompasses brief information about the VR-VOLL project and VR within this context. The added value for the target groups and end users in VOLL is handled in the scope of the project result 4 (PR4), which is Target Language Competencies. The preparation of VR scenarios and feasibility of the VR technology in VOLL is also emphasised. The latter provides technical information about the innovative technology, VR. It aims at making the beneficiaries aware of the newest digital tools. Instructions on how to set up and use VR headsets, launch, and operate the teaching application, along with a quick review of the VR-VOLL material, and guidance on the process to follow to create your own scenarios are included in this chapter. VR scenarios provided by all partners and procedures about how to create these scenarios are integrated as well. It presents procedures for tailoring and developing your own scenarios to suit specific VOLL needs.

The guidebook has been developed in the leadership of Adiyaman Milli Egitim Mudurlugu along with the partners (Flensburg University of Applied Sciences, Arcola Research Portugal LDA, University of Évora, University of Cukurova, Vilnius Gediminas Technical University from four countries (Germany, Lithuania, Portugal, Türkiye (Cukurova and Adiyaman))

1.2 Purpose of this Guidebook

This guidebook serves as an instruction manual on how to develop and use virtual reality (VR) and augmented reality (AR) scenarios for teaching and learning in vocational language learning.

For Teachers

This guidebook introduces several scenarios on a variety of VET-related topics which serve as examples that may be used for teaching and learning or as models for further scenario development and creation.

The guidebook introduces accessible and affordable platforms to create virtual and augmented reality scenarios. Examples included in this guidebook are H5P and Lumi-based which are open source.

A special feature of the created scenarios is that they can be used in multiple ways with and without specialised equipment.

For Learners

The guidebook provides scenarios on topics from professional areas such as nursing, hospitality, medical equipment and laboratories, to name but a few. They should be used to learn and practise vocabulary and phrases on specialised topics. They may also be used as a model for learners to approach other job-related language learning. Learners can access the scenarios using a variety of technology ranging from web browsers, smartphones to VR goggles.

2. Vocationally Oriented Language Learning (VR-VOLL)

This chapter delves into the concept, key features, and benefits of VR- VOLL, demonstrating how immersive and interactive VR environments can enhance language learning within specific vocational contexts.

2.1 Short Description of the Project

Languages play an extremely important role as one of the predominant means of communication in the global community to interact with people worldwide and to keep up with technological progress. English, for example, is no longer considered a foreign language to be learned but has increasingly become a medium of instruction in many countries. At the same time, industry and trade have become more globalised and the demand for skilled labour has increased significantly. In contrast to what used to be included in school and centre curricula, special attention is now given to vocational education and training because of its enormous contribution to countries' economies. This globalisation of business and trade means that prospective workers need language skills that are central to global industry and commerce.

This Erasmus+ project unites six partners from four countries (Türkiye, Portugal, Lithuania, and Germany) and is focused on the objective of "digitalisation". The project aims to develop VR-based tools for language teaching in a vocational education and training setting. To achieve this, it aims to highlight where and how VR can add value to vocational language learning by using an action-oriented research approach. This will be done by testing the use of VR in a range of vocational language courses and assessing the resulting benefits for language learners and the practical advantages for teachers. The unique thing about this project is that it is not only about learning English but also about the languages of the member countries so that the outputs can be used for any country and any language.

VET learners are a group of people with special language needs according to their future language needs in working life. Currently, in most VET schools or centres there is only a general language curriculum, which is not based on the language level of the future profession. As a result, learners cannot meet the language requirements of the future profession after graduation and thus cannot establish themselves in working life. In the project, all consortium partners join forces to address the language needs of learners in VET, organise activities for teachers in education and training and increase the efficiency of language teaching in VET schools and centres. The application of innovative VR technology enables vocational scenarios

in an international language, improving workplace language skills in vocational contexts, with the additional improvement of digital skills. In this way, better-qualified graduates will be trained and their integration into the labour market will be facilitated, especially in cases where access to vocational-specific settings is limited.

The overall goal and objective are to develop VR-based tools for language teaching in vocational education and training and to contribute to employability, economic growth, and social cohesion. The Definition of VR in the Context of VR-VOLL

Our project leverages virtual reality (VR) technology to revolutionise language teaching in vocational education and training (VET). The following key elements define our approach:

Immersive Environments: VR provides learners with immersive environments where they can interact with virtual objects and characters, creating a sense of presence and engagement.

Interactive Learning: VR provides learners with highly immersive environments where they can interact with virtual objects and characters, creating a profound sense of presence and engagement. These realistic simulations help learners feel as though they are in real-world vocational settings, enhancing their learning experience.

Contextual Relevance: The VR scenarios are meticulously designed to be directly relevant to specific vocational contexts. This contextual relevance ensures that learners acquire and practice language skills that are pertinent to their professional needs, making the training highly applicable and beneficial for their careers.

Personalised Learning: VR technology enables the creation of personalised learning experiences tailored to each learner's proficiency level, learning pace, and specific vocational requirements. This customization ensures that every learner receives an optimal level of challenge and support, facilitating more effective and individualised learning outcomes.

Feedback and Assessment: The VR platform includes tools for providing immediate feedback and assessing learners' performance, helping them to improve and refine their language skills.

In summary, VR in VR-VOLL is a transformative approach that utilises virtual reality technology to create immersive, interactive, and contextually relevant language learning experiences tailored to vocational education. To increase accessibility the project uses open-

source platforms and tools to ensure that the methodology is accessible and covers augmented reality (AR) scenarios as well as VR possibilities.

2.2 Target Groups and End Users

The foreign language teaching curricula in the secondary education systems in the partner countries have been observed to be mostly limited to the general use of language. The absence of a vocationally oriented language curriculum, or VOLL approach, in the educational systems of the partner countries, deepens the gap between students' expected language learning by the time of their graduation and the language requirements of the labour market. As a result, young people across Europe, who are about to enter the labour market, at the end of this entire vocational training process, can't find a high-quality job, which leads to unemployment.

There are pre- and in-service teachers, and VET teachers who suffer from a lack of appropriate content and a method for learners with special or vocational language needs. This project provides useful examples of real-life scenarios and a guidebook in 4 European languages. It also acts as a guide to integrating cutting-edge VR and AR technology and these scenarios in VET classrooms. Since the online system works as a repository of learning units and scenarios, educational institutions, learners, pre-service and in-service teachers, and VET teachers may find the content of this manual invaluable. The project hopes that this material will improve student motivation and contribute to alleviating the general lack of vocational language material. Thanks to LTTs (Learning, Teaching, Training Weeks) and MEs (Multiplier Events), the outcomes of the project will be disseminated to various stakeholders in the partner countries. The project will provide a complementary methodology to the existing curriculum, addressing the enhancement of essential language skills required for individuals to effectively operate within specific vocational fields, thus meeting the demands of a multinational workplace. In this context, the project aims to contribute to solutions to the problems that exist in the partner countries and across Europe by equipping the target groups mentioned above with the potential that these technologies present.

3. VET Teaching in General and Advantages of VR in Language Learning

Being a medium of communication, the English language holds a crucial position in international business. It serves as a means of linguistic interaction and communication among people from different countries and cultures. Yet it has gradually become an instruction language used as L2 in many countries. Therefore, language teaching integrated into the framework of VET has a significant role in preparing learners for their vocational areas through supporting effective communication skills, thus improving employment opportunities across diverse industries. It equips the learners with the necessary language skills required for their vocational field and meets the needs of the labour market. In this sense, English for VOLL has been exploited to ensure learners' achievements in their future professions.

VOLL content is designed in a manner that meets the requirements of learners and other stakeholders and enables them to engage effectively within specific fields of occupation. VOLL is thus oriented towards the vocational aspects of the learner's life, but it is not limited to the immediate occupational demands of work. VOLL is an integral part of lifelong learning combining directly work-related skills with personal growth, cultural awareness, and social skills.

In the context of vocational education, both secondary and higher education students are placed in specific vocational areas, such as engineering, tourism, hotel hospitality, and healthcare. For this reason, students must experience texts relevant to their vocational skills. This has a significant implication for English language programs (Widodo,2016).

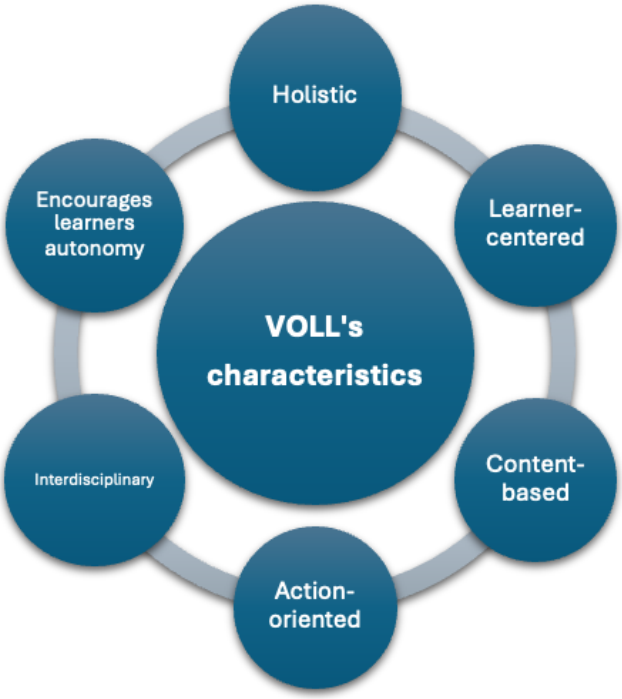
Vocationally Oriented Language Learning (VOLL) can be seen as a component of ESP. However, they vary in their range and emphasis. VOLL goes beyond ESP by incorporating multiple languages, not solely English. Its scope encompasses a wider variety of learners and situations they should be prepared to handle. VOLL aims to equip learners beyond the workplace, nurturing a holistic ability that combines vocational, linguistic, and social skills. The language acquired in VOLL addresses the needs of learners in and out of the workplace which provides flexibility in both job-related and daily life situations. Furthermore, this

flexibility of language in VOLL facilitates teachers to be responsive in the preparation of communication situations that might be most relevant for their learners.

Learners in the secondary and tertiary sectors must be given tools for lifelong learning in professional contexts. According to Vogt & Kantelin (2012: 63) "… the concept of vocationally oriented language learning (VOLL) fulfils these needs both in preparing learners for the linguistic challenges in their later (working) lives and enabling them to engage in lifelong learning processes."

It has been discussed how vocationally oriented language teaching should be constructed: general language skills first or job-relatedness from the beginning. Early job-relatedness follows the principles of systemic functional and sociocultural language learning theories (Kuparinen 2017: 94). These theories understand learning as participation in situational activities. Virtanen (2017: 35) also emphasises the importance of observation: by observing language, the learner can acquire the language used in the environment and further develop his or her language abilities.

VOLL has various characteristics. It is holistic because it is less important to memorise specific vocabulary as a glossary; it is about communication in a foreign language, which involves the learner as a whole person. It is also learner-centred because its starting point is the learner's experiences and their future professional contexts. VOLL tries to consider future communicative needs in real life, including working life and is, therefore, content-based; by considering the learners' professional contexts, it enables teachers to contextualise learning tasks in these very professional contexts. This implies a task-based approach, which is usually adopted in a VOLL learning environment as the foreign language is used to accomplish tasks and cope with situations on the job. At the same time, this type of foreign language learning is action-oriented because the task ideally activates the learners.



Tasks are usually put into a larger context; therefore, VOLL can also be considered project-based because it integrates more comprehensive and more complex tasks in a foreign language.

VOLL is action oriented. It highlights the importance of using foreign language skills practically and being actively involved in real-life job-related situations.

3.1 Applicability and Accessibility of VR-Technology in VR- VOLL

It's becoming more and more apparent that learners need to be equipped not just with vocational skills, but also with specialised language proficiency. The integration of VR technology and 360-degree pictures in VOLL offers an innovative approach to transform language learning within VET areas. In that vein, the project will exploit approaches like Computer Assisted Language Learning (CALL) or Task-Based Language Leaching (TBL). The project aims to create a free-of-charge and open-source web-based platform that will provide pre-prepared real-life scenarios for educational institutions, learners, pre-service and in-service teachers, and VET teachers. Utilising the online system as a repository of learning units and scenarios, the target groups and end users will exploit the promising potential of VR technology and 360-degree pictures.

The advantages of integrating VR technology and 360-degree pictures into VET classes are numerous. This innovation offers cost-effectiveness, easy implementation, remote learning and accessible learning resources. Thanks to the platform, the beneficiaries will afterwards be able to practise the various scenarios at any time or place on their smartphone which is the most common technological and portable device they have. The detriments of safety concerns or remoteness can be annihilated by simulating real-life vocational environments. The cutting-edge approach, in VET teaching, makes it accessible for any learner to use innovative technology with limited budgets, which helps learners develop their vocational skills in a safe environment. The technology also provides teachers with tailored VR content for learners' specific needs in vocational training.

Apart from its various advantages, the project notably offers low cost and accessibility to end users. The functionality and adaptability of scenarios will provide added value to sustainable development in VOLL.

3.2 Our Created Scenarios

In this chapter, we present a series of meticulously designed VR scenarios aimed at enhancing language learning within vocational education and training (VET). These scenarios leverage the immersive and interactive capabilities of VR to provide learners with practical, contextually relevant experiences that mirror real-world vocational settings. Our goal is to bridge the gap between theoretical language knowledge and practical application, ensuring that learners acquire the language skills essential for their specific professional environments.

The scenarios presented in this chapter are meant to inspire educators and trainers, showcasing the diverse ways in which VR can be used to set up effective and engaging learning experiences. Each example illustrates different approaches and techniques for integrating VR into vocational language training, demonstrating the versatility and potential of this technology. By exploring these scenarios, we aim to provide a comprehensive understanding of how VR can be tailored to meet various educational objectives and professional needs.

Below, we provide direct access to the VR scenarios we have developed for vocational language learning. To facilitate easy and immediate access, we have included links and QR codes that lead to each scenario. These digital resources are designed to offer educators, trainers, and learners a seamless way to explore and engage with our immersive, interactive, and contextually relevant learning environments. By simply clicking on the links or scanning the QR codes, users

can experience the various vocational contexts and language learning activities we have created. These scenarios serve as practical examples of how VR technology can be integrated into vocational education and training (VET), demonstrating the potential to enhance language proficiency and professional skills.

Name of the Scenario	Link	QR Code
How to check in	https://app.Lumi.education/run/PNyNuV	
Computer laboratory	https://app.Lumi.education/run/-RscHJ	
Computer laboratory 360	https://app.Lumi.education/run/bTZwCC	
Computer laboratory exercise match	https://app.Lumi.education/run/eSmjki	
Computer laboratory - Fill in the words	https://app.Lumi.education/run/0cMvYQ	

Computer laboratory - reading activity	https://app.Lumi.education/run/KzOyWp	
Electric cars	https://app.Lumi.education/run/SPmAff	
Electric cars exercises	https://app.Lumi.education/run/WdP3rI	
Electric cars - Match the words	https://app.Lumi.education/run/CWgqv4	
Electromagnetic fields	https://app.Lumi.education/run/7A0uAr	
Electromagnetic fields - Listening Comprehension	https://app.Lumi.education/run/619aSX	

Electromagnetic fields - Drag the words	https://app.Lumi.education/run/_KaldD	
Electromagnetic fields - Flashcard Exercise	https://app.Lumi.education/run/80pVPW	
MRI machine	https://app.Lumi.education/run/niJgAJ	
MRI machine - summarize	https://app.Lumi.education/run/Twoqfc	
MRI machine - Drag/Drop	https://app.Lumi.education/run/E69vjK	
MRI machine - Do/Don't	https://app.Lumi.education/run/YiLq9B	

MRI machine - True/False	https://app.Lumi.education/run/Q8y5kI	
MRI machine - Drag and Drop 2	https://app.Lumi.education/run/qd6r-B	
Blood donation	https://app.Lumi.education/run/52zTvH	
Nursing laboratories	https://app.Lumi.education/run/gVlROz	
Nursing laboratories	https://app.Lumi.education/run/L8ognD	
University of Évora	https://app.Lumi.education/run/wtUFvD	

Bio laboratory - Exercises	https://app.Lumi.education/run/VbxJAQ	
Bio laboratory - Audio	https://app.Lumi.education/run/yQVX5-	
Bio laboratory - 360 picture	https://app.Lumi.education/run/kORyKd	
Multimedia laboratory 360	https://app.Lumi.education/run/ON-6DV	
Multimedia laboratory - Audio	https://app.Lumi.education/run/_-l39H	
Multimedia laboratory- exercises	https://app.Lumi.education/run/lDwrq1	

Inside the Cockpit B737	https://app.Lumi.education/run/tyWpE5	
Inside the Hangar	https://app.Lumi.education/run/GUffRP	

3.3 Templates

During our PR2 (project result), VR scenarios, we created a general template example. Using a template serves several important purposes when creating scenarios:

Consistency: Templates ensure that all sections of the document follow a uniform structure. This consistency makes it easier for readers to navigate and find information quickly.

Clarity: A well-organised template helps to present complex information clearly and logically.

Efficiency: Templates save time by providing predefined sections and headings. You can focus on content creation rather than formatting, speeding up the document writing process.

Guidance: This guidance helps you stay focused on key information relevant to VR- VOLL.

Professionalism: A well-designed template enhances the professionalism of our scenarios. It shows that one has carefully structured the information and considered the needs of your audience, whether they are educators, technicians, or learners.

Adaptability: Templates can be customised to suit specific needs or preferences while maintaining overall coherence. You can tailor sections to highlight unique features or requirements of the VR tools being used.

VR-Scenario: xxx
Partner: xxx

xxxEducational sector: Vocational Education and training xxx
Student's Profile: xxx
Language level: xxx
Underpinning methodology: xxx
Required time: xxx

VR Scenario	Intended learning outcomes	Communicative Language Competences		Description of the VR scenario
Unit 1 "xxx?". Future xxx will use the VR-scenario to learn words and phrases to "give a description of a concept/system" related to a disciplinary topic.	Students will be able to understand xxx Students will be able to give clear, systematically developed descriptions and presentations of xxx	Linguistic Pragmatic Sociolinguistic		1) Flipped classroom approach 2) Pre-learning required (essential vocabulary) 3) The VR task asks students to enter a virtual lab of an EE Department of University X. 4) Take a virtual tour using head mounted VR headsets 5) Action-oriented tasks: drag and drop 6) Head mounted VR headset 7) Post-activity
		Communicative language strategies	Communicative language activities	
		Identifying cues and inferring	**Audio-visual comprehension:** Understanding audio (or signed) media - selecting specific information; - understanding main points, essential information; - identifying speaker mood, attitudes and viewpoints.	
		Planning, monitoring and revising	**Overall production**: - Addressing audiences; - Delivering a monologue: describing a concept; presenting an argument; describing a situation; describing a case study; - Reporting on XXX;	

PR2: Our Created Template for Scenarios

This template serves as the foundational framework for designing immersive and effective VR scenarios that integrate language learning with vocational training. It is crucial to take the time to carefully fill in this template, considering the following key topics:

Intended Learning Outcomes

Clearly define the specific learning objectives that the VR scenario aims to achieve. These outcomes should align closely with both language learning goals and vocational skills development.

Communicative Language Competences

- **Linguistic**

Specify the language skills (e.g., vocabulary, grammar) learners need to develop within the vocational context.

- **Pragmatic**

Address how learners will understand and use language appropriately in various social and professional situations.

- **Sociolinguistic**

Focus on understanding cultural nuances and conventions related to language use in vocational settings.

Communicative Language Strategies and Activities

Describe the strategies and activities that will be used to facilitate language learning within the VR scenario. Include interactive tasks that encourage learners to engage actively with language and vocational content.

- **Identifying Cues and Inferring**

Outline how learners will identify contextual cues and make inferences based on the information provided within the VR scenario. This skill is essential for real-world application of language in vocational contexts.

- **Planning, Monitoring, and Revising**

Explain how learners will plan their language use, monitor their progress, and revise their communication strategies as needed during the VR scenario. This reflective practice supports continuous improvement in language proficiency.

- **Description of the VR Scenario (Types of Activities)**

Provide a detailed description of the VR scenario, including all types of activities learners will engage in.

This template serves as a comprehensive guide to creating engaging and effective VR scenarios for VR- VOLL. By filling it out thoughtfully, educators can ensure that the VR scenarios developed align closely with educational objectives and provide meaningful learning experiences for vocational language learners.

4. Getting Started with Lumi

This chapter will help you familiarise yourself with Lumi's features and functionalities, enabling you to enhance your vocational language training with dynamic and interactive elements.

4.1 A Step-by-Step Guide

Follow these instructions to get started with H5P and Lumi

1. Visit Create H5P and host your content on Lumi - Lumi Education
2. Download the **Lumi Desktop Editor**
3. Choose the desired operating system and download the corresponding file
4. Open the download file and install Lumi on your local computer
5. Start Lumi
6. Click **Start** on the h5p editor tab
7. To open an existing h5p file, select **Open H5P File**
8. To create a new h5p project, select **New H5P File**
9. Select a content type

4.2 Creating Content Types – A Tutorial for Authors

There are various content types available to create individual types of exercises and scenarios (Tutorials for Authors, n.d.). Within our project, we have created the types of activities listed below (Lumi Education, 2024)

- **Interactive Video Tutorial**

The Interactive video content type allows you to add interactions on top of video clips. Interactions such as images, elaborating text, links and quizzes pop up while the learner watches the video.

To find the H5P tutorial, click on this link: Interactive Video Tutorial | H5P

- **Course Presentation**

The Course presentation content type allows you to create a slide-based presentation of your learning material. Elements such as slide titles, links, pictures, audio and video clips, as well as various quiz types can be embedded seamlessly right into the presentation for a richer learning experience.
To find the H5P tutorial, click on this link: Course Presentation Tutorial | H5P

- **Drag and Drop**

The Drag and drop content type allows learners to drag a piece of text or an image and drop it on one or more corresponding drop zones.
To find the H5P tutorial, click on this link: Drag and Drop Tutorial | H5P

- **Virtual Tour (360)**

Virtual Tour (360) content type allows users to add questions, text, and interactions to multiple 360 environments using only a web browser. Make your 360 (equirectangular) images more engaging with H5P and Virtual Tour.
To find the H5P tutorial, click on this link: Virtual Tour (360) Tutorial | H5P

- **Flashcards**

The Flashcards content type is a set of cards containing a picture on one side of the card and a corresponding text on the other side. The learner is asked to type a word or expression corresponding to the picture, before turning the card over and revealing the correct answer.
To find the H5P tutorial, click on this link: Flashcards Tutorial | H5P

- **Drag the Words**

Drag the words question type allows the creation of text-based challenges where users are to drag words into blanks in sentences. Excellent for language training among other things.
To find the H5P tutorial, click on this link: Drag the Words Tutorial | H5P

- **Multiple Choice Question**

The Multiple-choice content type is your staple multiple choice quizzing tool. Multiple Choice can be used to test the learner's level of knowledge on a given topic.
To find the H5P tutorial, click on this link: Multiple Choice Question Tutorial | H5P

- **Fill in the Blanks**

The Fill in the blanks allows eLearning designers to create cloze tests. Portions of words or sentences are removed from a text and the learner is asked to replace the missing text.
To find the H5P tutorial, click on this link: Fill in the Blanks Tutorial | H5P

- **True/False**

A True/False question is often used in surveys and consists of a statement that demands a true or false answer. Alternatively, you could change the answers to Yes/No, Agree/Disagree, etc.
To find the H5P tutorial, click on this link: True/False Tutorial | H5P

- **Summary**

The Summary content type allows learners to interactively build a summary of a certain topic. Summaries are a perfect way to strengthen your learners' ability to remember by encouraging them to build interactive summaries as they learn.
To find the H5P tutorial, click on this link: Summary Tutorial | H5P

- **Single Choice Questions**

The Single Choice Set content type allows content designers to create question sets with one correct answer per question. The end user gets immediate feedback after submitting each answer.
To find the H5P tutorial, click on this link: Single Choice Set Tutorial | H5P

5. How to Use VR in VET Classes

This chapter will equip teachers with the knowledge and strategies needed to effectively utilize VR to enhance language learning and vocational skills, creating immersive and interactive learning experiences for their students.

5.1 Benefits of VR in Education

VR technology is a potent tool for transforming language learning experiences. It provides learners with immersive, interactive, and multisensory environments. The 2020 EDUCAUSE Horizon Report (Brown et al., 2020) claims that exploiting VR in teaching and learning addresses some opportunities such as accessibility, cost-effectiveness and increasing self-confidence exploiting simulations. Therefore, integrating VR into VET programs may offer a myriad of benefits to learners (13 and 17, 2023). Some of them are:

Realistic Work Simulations

- VR enables learners to experience realistic workplace scenarios without the limitations of physical resources or real-world risks.
- Learners can practise vocational skills, problem-solving, and decision-making within a safe and controlled environment.

Promote Practical and Technical Skills

- Learners can practise their technical skills and gain hands-on experience through the usage of VR.
- Learners can practise their technical skills through virtual simulations of operating machinery, performing maintenance, or performing other technical procedures.
- Learners simulate vocational scenarios and challenges and mitigate the risks of possible real-time injuries.

Enhance Engagement and Immersion

- VR attracts learners' attention for inclusivity by creating an exciting learning environment and providing an interactive learning experience by simulating real-world scenarios.
- Learners improve their hands-on skills in realistic simulations without the fear of making mistakes hence increasing their immersion and engagement.
- VR enables learners to practise any scenario repeatedly in a safe environment that assists them in enhancing their self-confidence.

Safe and Accessible Environments

- VR provides a safe and unthreatening milieu that otherwise would be hazardous and difficult to visit by eliminating environmental constraints.
- Learners can practise their vocational knowledge and skills through interacting with the virtual environment.

Cost-effectiveness

- VR offers more cost-effective alternatives for inaccessible environments and hazardous activities.
- VR lessens the need for tangible resources.
- VR enables repeated practice without incurring additional costs.

Promote Self-confidence and Readiness

- VR enhances learners' self-confidence and readiness for the workforce in their chosen vocations.

5.2 Creating VR Content for VET Classes

In this section, you will learn how to create VR content for VET classes.

1. Identify Learning Objectives

- Determine the specific learning objectives you want to address in the lesson, such as improving speaking, listening, or vocabulary skills related to a vocational context. Prepare a scenario template as a syllabus.

2. Design the VR Environment

- Create a virtual environment that aligns with your learning objectives. Consider the vocational context, such as a kitchen, a reception, or a customer service scenario, and design the surroundings accordingly.

3. Select a VR Content Creation Tool

- Choose a VR content creation tool that suits your needs and technical capabilities. There are various tools available such as Lumi, H5P (Lumi education, 2024)

4. Demonstrate VR Equipment and Controls

- Show students how to wear the VR headset properly, adjust the straps for comfort, and position the lenses correctly in front of their eyes.
- Demonstrate how to use the controllers or hand gestures to interact with objects, navigate within the VR environment, and access menus or options.

5. Pre-teach Vocabulary and Concepts

- Familiarise students with any specialised vocabulary or concepts they will encounter within the VR environment.
- Provide explanations, examples, and practice activities to ensure students have the necessary background knowledge to understand and engage with the VR experience.

6. Script and Record Audio

- Prepare a script that includes vocabulary and explanations relevant to the language skills being targeted.
- Attach or record high-quality audio to accompany the vocabulary to be taught in the VR experience.

7. Add Visuals and Multimedia

- Enhance the VR experience with visuals and multimedia elements relevant to the vocabulary. Use appropriate visuals (panoramic, 360, 3D) that reinforce the vocabulary being taught.

8. Incorporate Interactive Elements

- Integrate interactive elements within the VR environment to engage learners and encourage active participation. Include objects or characters that students can interact with, such as clickable items, drag- and- drop activities, dialogue prompts, or tasks to complete.

9. Test and Adjust

- Gather feedback from learners about what they learned and any challenges they encountered within the VR environment.

10. Evaluate Learning Outcomes

- Assess learners' language development and progress based on the targeted learning objectives in the VR activity by using a variety of assessments such as observations, quizzes, or performance-based tasks.

5.3 Implementing VR Scenarios in VET Classes

In this section, you will be able to examine a predefined VR scenario for VET classes. It will help teachers to learn how to implement the VR scenarios in their VET classes. They can also be used at various language levels according to the CEFR (Common European Framework of Reference for Languages: Learning, Teaching, Assessment (CEFR) - Common European Framework of Reference for Languages (CEFR) - www.coe.int, n.d.)).

5.4 A Step-by-Step Guide on How to Implement VR Scenarios

1. Objectives

A VR scenario template is to be useful to work in a planned manner. An example of a VR scenario on “How to check in” is provided below to help teachers integrate and implement VR technology in their VET classes.

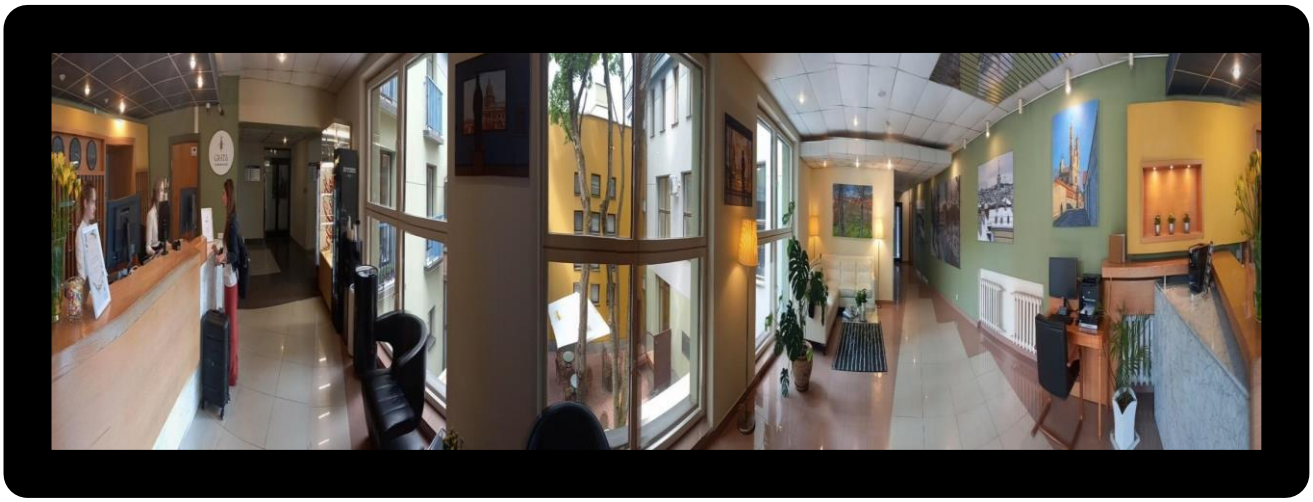
VR-Scenario: Describing a concept/system
Partner: Adıyaman Directorate of National Education

Educational sector: Vocational Education and Training (Tourism>Hotel>Reception)
Student's Profile: Secondary Education (High Schools)
Language level: CEFR A2
Underpinning methodology: TBL
Required time: 2 lessons (40 mins each)

VR Scenario	Intended learning outcomes	Communicative Language Competences		Description of the VR scenario
Unit 1 "How to check in?". High school Vocational Education of Tourism learners will use the VR-scenario to learn words and phrases to "How to check in?" related to a disciplinary topic e.g. "Hotels"	Students will be able to understand the media content in English for a hotel and comprehend phrases and attitudes on "How to check in?" at a reception zone.	Linguistic Pragmatic Sociolinguistic		1) Flipped classroom approach 2) Pre-learning required (essential vocabulary) 3) The VR task asks students to enter a virtual reception zone of a hotel. 4) Take a virtual tour using head mounted VR headsets 5) Action-oriented tasks: drag and drop 6) Head mounted VR headset 7) Post-activity
		Communicative language strategies	Communicative language activities	
		Identifying cues and inferring	**Audio-visual comprehension:** Understanding audio (or signed) media - selecting specific information; - understanding main points, essential information; - identifying speaker mood, attitudes and viewpoints. **Overall production**: - Addressing audiences; - Delivering a monologue: describing an object related to a reception zone; presenting/describing a process, a situation or a case study; - Delivering a dialogue about how to check in at a hotel	
		Planning, monitoring and revising		

2. Design the VR Environment

Create a virtual environment that aligns with your learning objectives. Consider the vocational context that is "How to check in " as in the template and design the surroundings accordingly. Take a picture with a 360-degree camera (or with your mobile phone), yet a panoramic photo is also convenient. Here is a photo of "How to check in?".



3. Select a VR Content Creation Tool

Choose a VR content creation tool that suits your needs and technical capabilities. There are various tools available, such as Lumi, H5P etc. We used Lumi to create this scenario (see chapter 5. How to Use VR in VET Classes for a detailed step-by step guide). Also, we used Label the picture and made it compatible with VR using suitable tools. As an example, a labelled picture of "how to check in" is provided below.

4. Demonstrate VR Equipment and Controls

- Show students how to wear the VR headset properly, adjust the straps for comfort, and position the lenses correctly in front of their eyes.
- Demonstrate how to use the controllers or hand gestures to interact with objects, navigate within the VR environment, and access menus or options.

For a detailed explanation, please visit the section "Getting Started with VR Headsets"

5. Pre-teach Vocabulary and Provide Audio Records

- Familiarise students with the vocabulary related to the "How to check in?" theme to be used in the VR environment
- Prepare a script that includes vocabulary, explanations, and translations in your mother tongue.
- Attach or record high-quality audio to accompany the vocabulary.
- Provide practice activities to ensure students have the necessary background knowledge to understand and engage with the VR experience.

6. Test and Evaluate Learning Outcomes

- Gather feedback from learners about what they learned and any challenges they encountered within the VR environment.
- Assess learners' language development and progress based on the targeted learning objectives in the VR scenario by using a variety of assessments such as observations, quizzes, or performance-based tasks.

6. Technical Annexe: An Introduction to VR-Headset, if relevant 3D VR Tools have been used

This chapter provides a detailed technical manual for implementing Vocationally Oriented Language Learning (VR- VOLL) using specific VR tools. It covers the essential hardware and software components required, setup instructions, and best practices to ensure an effective and seamless integration of VR technology into vocational education and training programs.

6.1 Introduction to VR-Headsets

A VR headset is an item worn on the head that submerges the user in a 3D environment that has been artificially created. It typically consists of a head-mounted display (HMD), internal or external sensors for tracking movement, and occasionally handheld controllers for interacting with the virtual environment. While using a VR headset, the user's visual and auditory senses are fully activated. It creates a sense of presence and immersion in a virtual world.

Two screens, one for each eye, are typically used in HMD to expose stereoscopic images that give the impression of being in three dimensions (3D). Modern VR headsets aim to provide a wide field of view (FOV) for a more immersive experience, though the FOV can vary depending on the headset.

Many VR headsets also include controllers that let users interact with virtual objects and change their surroundings. Because these controllers are tracked in 3D, users can move their hands and make gestures naturally in the virtual world.

Based on their functionality and specifications, VR Headsets may be divided into several distinct varieties. There are Tethered VR headsets, which need a potent computer to function, Standalone VR headsets, which don't need a separate device and have built-in processing capability and independent power source (battery), and Smartphone VR headsets, which use smartphones as the display and processing unit.

VR headsets have also gained popularity in education in various fields, including gaming, entertainment, and training. Users can explore virtual worlds, recreate real-life scenarios, and take part in virtual learning activities thanks to their immersive and interactive experiences. As technology develops, VR headsets get better and better, with more accurate tracking, more comfortable user experiences, and better visuals.

Overall, VR headsets provide a gateway to the virtual world, enabling users to step into immersive experiences and interact with virtual environments.

6.2 Types of VR-Headsets

The main types of VR headsets can be assorted under 3 major categories (How to set up Oculus Quest 2, 2023; Oculus Quest Manual, 2023).

Each has its unique features and capabilities.

- **Tethered VR Headsets**

As their name implies, a physical connection to a computer is required to function properly. Even though its mobility is limited, it offers a better visual quality and a more immersive experience. Powered by a computer, these headsets do not need a battery, rendering them lighter than others.

- **Standalone VR Headsets**

These headsets are all-in-one, that is, they do not require a computer or an external device to function. They have built-in displays, batteries, sensors and storage memory. These headsets are wireless, more portable, and suitable for mobility, yet they offer lower-quality graphics than the tethered ones.

- **Smartphone VR Headsets**

The VR experience is created by exploiting a smartphone inserted into the headset. These VR headsets rely on a smartphone's screen and built-in processors to provide a sense of depth. The higher quality smartphone you have, the higher quality VR graphics you experience.

6.3 Using VR Applications

1. Put on the VR Headset

- As stated earlier in this guidebook, make sure the VR headset is properly connected and comfortably adjusted.

2. Start the VR System

- Switch on your VR system by pressing a power button on the standalone VR headset or an independent control unit for a tethered VR headset.

3. Access the Main Menu or Dashboard

- Once the VR system is activated, you mostly see a main menu or dashboard within the virtual ambient.
- You can navigate the menu options by using the controller.

4. Selecting and Launching an Application

- There is a menu item, icon or button referring to your library of applications on the main menu or dashboard.

- Navigate in the application library using controllers and then select the app you want to start pressing a button or trigger.

5. Exiting the Application

- Find an icon or button in the menu that lets you quit or return to the home screen or dashboard.
- Exit the application by pressing the button or trigger on the controller.

6.4 Getting to Know VR Controls

Most VR headsets include controllers, consisting of different types and shapes. These controllers are commanded by hand, fingers and other body parts (Types of VR headsets: PC, Smartphone & Standalone VRand 15, 2023). The most effective ones to interact with the virtual

world are those that give users total control over their environments. To express the importance of controllers in VR systems, Tanjung et al. (2020) state that the degree of interaction in virtual reality systems is significantly increased by the availability of control devices that utilise hand and finger movements. In this section, though there are many and various controllers, we will briefly get to know a few of the more accessible and commonly used controllers in VR systems.

1. Handheld Controller

- Buttons: There are various buttons for different tasks. Examples of typical buttons include those for menus, and systems, and those for interacting with or grabbing objects.
- Triggers: The action of gripping or releasing virtual objects is simulated through using triggers on controllers.
- Touchpads/Thumbsticks: Navigation, movement, and menu scrolling are all possible with the help of these buttons.
- Haptic Feedback: Haptic feedback is a feature that is available on many controllers, and it can simulate the feeling of touch or vibration while enhancing immersion by giving haptic feedback during interactions.

2. Leap Motion Box (Hand Gestures)

- It is a small, portable and rectangular box connected to the computer. It tracks and detects fingers and hand movements in real-time and then replicates them in VR experience.
- It is placed in the area where the VR headset is used and allows for hand tracking through hand gestures without the need for holding the controllers.

3. VR Gloves

- VR gloves are wearable accessories that provide users with haptic sensations and allow them to replicate real-time movements and interactions such as touching, grasping or holding in VR.

4. Voice Controller

- A voice controller is a type of equipment that works on the principle of recognizing voice and acting accordingly to control objects without the need to touch anything physically.

6.5 VR Safety Instructions

To have a comfortable and secure VR experience, some safety precautions must be taken into consideration when using a VR headset. Since users are fully immersed in the virtual world, they may experience some side effects of VR (9, 2023). In their study on the adverse effects of VR, Park and Lee (2020) found that full immersion in VR affects the users' static balance and causes eye fatigue and dizziness. Therefore, prioritising safety and adhering to recommended guidelines for a comfortable and immersive virtual reality not only protects your health but also increases the quality of your VR experience.

1. Safe Environment

- Clean the environment of all hazardous objects and remove the obstacles that will lead to undesirable injuries.
- Keep in mind that you may lose track of your physical surroundings as the VR experience fully immerses you and distracts your attention from real-world surroundings.
- When using VR Headsets, try and remain aware of potential hazards in the surrounding environment.
- Being cautious and ensuring a secure area for VR experience will prevent or mitigate the risk of injuries and accidents.

2. Health Issues

- Start with shorter sessions if it is your first time exposed to VR.
- Prolonged use of VR headsets may cause eye strain and dizziness.
- Take regular breaks.

- Stop using a VR headset as soon as you experience any of the following symptoms: dizziness, eye strain, impaired balance, muscle fatigue, loss of awareness, nausea, drowsiness, blurred vision, or motion sickness.
- Adjust the headset comfortably on your head to avoid potential discomfort and strains.
- Take off the VR headset if you notice any skin irritation or itchiness.

3. Session Times

- Start with shorter sessions and then extend the duration gradually.
- Limit your VR session to 20 minutes and take at least a 10 or 15-minute break.
- Stop using VR when you don’t feel well and try again later.

4. Maintenance and Care

- Keep the lenses of VR headsets clean.
- Keep the headset away from direct sunlight and moisture.
- Keep the headset in a safe place

7. References

Adjust a VR Headset properly, (2023). Retrieved July 21, 2023 from https://unboundxr.eu/hoe-zet-je-een-vr-bril-op

Brown, M., McCormack, M., Reeves, J., Brook, D.C., Grajek, S., Alexander, B., Bali, M., Bulger, S., Dark, S., Engelbert, N., Gannon, K., Gauthier, A., Gibson, D., Gibson, R., Lundin, B., Veletsianos, G. & Weber, N. (2020). 2020 Educause Horizon Report Teaching and Learning Edition. Louisville, CO: EDUCAUSE. Retrieved July 22, 2023 from https://www.learntechlib.org/p/215670/.

Common European Framework of Reference for Languages: Learning, Teaching, Assessment (CEFR) - Common European Framework of Reference for Languages (CEFR) - www.coe.int. (n.d.). Common European Framework of Reference for Languages (CEFR). https://www.coe.int/en/web/common-european-framework-reference-languages/

Dudley-Evans, T., & St John, M. (1998). Developments in ESP: A Multi-Disciplinary Approach. Cambridge: Cambridge University Press.

Grünhage-Monetti, M., & Braddell, A. (2019). Language for work matters. Training, Language and Culture, 3(4), 27-35. doi: 10.29366/2019tlc.3.4.3

How to set up Oculus Quest 2, (2023). Retrieved July 24, 2023 from https://zybervr.com/en-eu/blogs/news/how-to-set-up-oculus-quest-2-step-by-step-beginner-guide-2022

K. Kuparinen (2017). Keeping up with the nurses – on-the-job language coaching of health care professionals of immigrant background, ICERI2017 Proceedings, pp. 477-480.

Lumi Education. (2024, May 21). Create H5P and host your content on Lumi - Lumi Education. https://lumi.education/en/

Oculus Quest Manual, (2023). Retrieved July 20, 2023 from https://www.manualslib.com/manual/1929904/Oculus-Quest.html#manual

Park, S., & Lee, G. (2020). Full-immersion virtual reality: Adverse effects related to static balance. Neuroscience letters, 733, 134974. Retrieved July 25, 2023 from https://doi.org/10.1016/j.neulet.2020.134974

Parmaxi, A. (2020). Virtual reality in language learning: a systematic review and implications for research and practice. In Interactive Learning Environments. DOI: 10.1080/10494820.2020.1765392

Pinto, D. (2019). Virtual Reality in Education: Learning a Foreign Language. In A. Rocha et al. (Eds.): WorldCIST'19, AISC 932, 589–597. https://doi.org/10.1007/978-3-030-16187-3_57.

Pinto, R. et al. (2021). Does gamification in virtual reality improve second language learning? In International Conference on Graphics and Interaction (ICGI) | 978-1-6654-8343-8/21/$31.00 ©2021 IEEE | DOI: 10.1109/ICGI54032.2021.9655286

Pinto, R.D. et al. (2021). Foreign Language Learning Gamification Using Virtual Reality—A Systematic Review of Empirical Research. In Education Sciences. 11, 222. https://doi.org/10.3390/educsci11050222.

Tactics VR Telehealth User Manual, (2023). Retrieved July 10, 2023 from https://tacticsvr.com.au/wp-content/uploads/2021/04/TACTICS-VR-TELEHEALTH-User-Manual-v1-draft.pdf

Tutorials for authors. (n.d.). H5P. https://h5p.org/documentation/for-authors/tutorials

Types of VR Headsets: PC, Smartphone & Standalone VR, (2023). Retrieved July 14, 2023 from https://www.simulatorhardware.com/virtual-reality/types-of-vr-headsets/

Virtanen, P., Niemi, H. M., & Nevgi, A. (2017). Active Learning and Self-Regulation Enhance Student Teachers' Professional Competences. In Australian Journal of Teacher Education, 42(12). https://doi.org/10.14221/ajte.2017v42n12.1

Vogt, K. & Kantelinen, R. (2012). Vocationally Oriented Language Learning Revisited. ELT Journal Volume 67/1 January 2013; doi:10.1093/elt/ccs049

VR in Education: How It Can Be Used?, (2023). Retrieved June 23, 2023 from https://keenethics.com/blog/vr-in-education-benefits-and-use-cases#Benefits_of_VR_in_Education

Widodo, H. P. (2016). Teaching English for Specific Purposes (ESP): English for Vocational Purposes (EVP). In Renandya, W. A. & H. P. Widodo (eds.). English Language Today. English Language Education 5. Doi: 10.1007/978-3-319-38834-2_19