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Introducing the XR Inclusion Toolkit: Empowering Women through

Language Learning

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1. INTRODUCTION

Are you ready to make a real difference in the lives of women facing immense challenges due to relocation and language barriers? We are thrilled to unveil the XR Inclusion Toolkit, a groundbreaking solution designed to foster inclusion, address sociolinguistic needs, and empower women with limited opportunities through immersive language education.

In collaboration with renowned experts in the field, our team has developed this toolkit with a clear purpose in mind: reducing the significant gap between refugee women, women with fewer opportunities, and language education. We understand that women who have experienced displacement, trauma, and adversity deserve the utmost support in their journey toward a brighter future.

The XR Inclusion Toolkit leverages the power of extended reality (XR) technology to create an engaging and realistic language learning environment. By immersing learners in a virtual world filled with diverse scenarios, our toolkit enables them to overcome anxiety associated with foreign language learning. With a wide range of lifelike scenarios, learners can explore practical activities and familiarize themselves with the sounds and nuances of a new language.

Unlike traditional language learning methods, our toolkit encourages learners to put their language skills to use in real-life situations outside the confines of a classroom. Say goodbye to tedious grammar rules and hello to language in action! XR learning environments empower students to utilize language flexibly across various contexts, facilitating a seamless transition from theory to practice.

However, the XR Inclusion Toolkit goes beyond language learning. It aims to bridge the gap between refugee women and women with limited opportunities by providing a platform for transnational negotiations of identity. By embracing their unique cultural backgrounds, learners can gain confidence, build connections, and foster a sense of belonging in their new communities.

Join us in this groundbreaking initiative to create a more inclusive and equitable society. By incorporating XR technology into language education, we can empower women with fewer opportunities to unlock their true potential and overcome the barriers they face.

Together, let's embark on a journey of transformation, resilience, and empowerment. Discover the XR Inclusion Toolkit and be part of a movement that is revolutionizing language learning and fostering a brighter future for all.

2. RESEARCH

As a consortium consisting of 4 European countries (Cyprus, Czech Republic, Greece, and Poland) we set out by doing research into the state of XR developments in language learning in our respective countries. The following will briefly describe our findings in two categories: desk research and focus group analysis. Desk research involves in-depth analysis of available literature, trends, and practices performed in the realm of XR teaching and learning. The focus group analysis involved carrying out a questionnaire among 20 language teachers to establish best practices and on-sight interviews with potential users ie. women with fewer opportunities. These will be shown in each respective country.

2.1 Desk research

a) Cyprus

To begin with, in Cyprus, there are many examples regarding good practice cases and examples of using VR technological applications in education, including STEM (Science, Technology, Engineering, and Medicine) courses, where students can work with VR, enabling them to visualize the solar system in an immersive manner, provide intense experiences previously unknown to the human mind, visit a foreign country, use language in an authentic context and interact with local people in a foreign language. The majority of these courses in Cyprus are mainly offered in primary education, afternoon extracurricular courses and in the field of afternoon programs of non-public education but not in the field of obligatory elementary education. In this field, a technology lesson is offered but XR applications are not part of the curriculum of studies. There have been some ERASMUS co-funded programs to pilot test VR applications in elementary schools. For example ATS STEAM and AR applications in classroom settings

like UMARG Mobile Augmented Reality Games, which are gaming environments that embed virtual, location, and contextual information into a physical site.

b) Czechia

The topic of virtual reality in education has begun to permeate the education process in a significant way, especially during the pandemic when many students have had limited face-to-face presence in education. The Czech education system is digitizing and modernizing at all educational levels. The trend is towards greater availability of online learning and the development of services and applications on mobile devices. Digital classrooms with VR sets are being introduced in primary and secondary schools for teaching science, such as geography, physics, and biology. In addition to the use of foreign software, domestic development of VR applications is also underway. Researchers from Masaryk University are currently developing an application for geography and language teaching. Virtual reality can be used to connect the real world with the digital world, usually by using digital technologies such as digital glasses, helmets, gloves, suits, walking aids, etc. Companies are already using virtual reality tools for various training, remote services, or in the medical field. Recently, in connection with the increased wave of immigrants in the Czech Republic, especially from Ukraine, there has been talk about the use of digital technologies and virtual reality in teaching Czech to foreigners. One of the first language schools to introduce VR applications into teaching Czech to Ukrainian children is the Hello language school in Ostrava.

c) Greece

Most language learning applications are aimed at students or people who already know a language and want to improve their skills or want to learn a new language. These applications, while seeking to be interactive, are not aimed at immigrants, refugees, or asylum seekers, since the latter have different needs and interests from casual learners, opting for language skills that will allow them to function independently in the host society. Furthermore, a Visual Analytics Component (VAC) leverages authority (NGOs/State institutions) users' perceptual and cognitive abilities by employing interactive visualizations as interfaces between users and learning analytics outcomes generated by amassed data. The goal is to find patterns within the characteristics of TCNs, and thus help language teachers adapt the content and tools to TCNs, contributing to greater personalization in learning

DS (Digital Storytelling) and AR (Augmented Reality) applications offer opportunities for the creation of a multimodal and interactive learning environment, making the learning concept more appealing and exciting than traditional or more conventional instructional tools. The overall objective of the work by Korosidou and Bratitsis (2021) was to assess how DS and AR can contribute to the enhancement of children's vocabulary in the FL (Foreign Language) through several gamified activities. To this aim, they restructured the classroom environment utilizing tangible interfaces to create a multimodal learning framework, where 6-year-old learners could play, collaborate and interact. Twenty (20) first-grade children of a Primary School in Greece (experimental group) were engaged in digital activities learning about Greek mythology and ancient history, while eighteen (18) children of the same grade and school (control group) were taught the same context in a more traditional learning environment.

d) Poland

In the context of learning a foreign language, Poland, like many other European countries, is no stranger to companies and start-ups offering XR FLL (Foreign Language Learning) solutions. For example, 3WAY Monika Mitoraj conducted research and

development work as a result of a grant from the Kuyavia-Pomerania Innovation Agency under the Research and Implementation Fund program, to develop an element of a method for conducting language classes in the VR/AR area, as well as the necessary system prototypes. 3WAY has developed the first language teaching tool in the VR space for the Polish and European markets, where a teacher and a student or a group of students meet in real-time classes. A series of tests confirmed that the chosen path was the best one for the project's future work and development. The company created a prototype, which sparked a lot of interest. The tools collected in the application, such as 3D models, a whiteboard, the ability to draw 3D, and posted graphics, make it easier to conduct classes and add contextuality to the classes, while also being a unique novelty for users, which is an additional element that values conducting classes in a specific space.

During the pandemic, a Polish company developed Englibot. It's a Messenger chatbot that teaches English using artificial intelligence.. Englibot is aimed at adults aged 25 to 55. Lessons are prepared using artificial intelligence and tailored to individual abilities and interests. At the same time, the application teaches language that is useful in everyday life. Other companies such as GiantLazer have also cooperated with the University of Rzeszów in order to create new products that could enrich this diverse market. According to the company, their previous experience with this type of project was based on a very specific tool - a speech recognition system that is programmed to capture the correct sentences associated with specific phases of various situations taking place in specific locations, such as an airport, home, or university campus

2.2 Focus group and questionnaire findings

a) Cyprus

Of all the 20 participants of the focus group, 8 have experience teaching over 20 years. Regarding vocational training, only 9 participants responded that they are actively engaged in vocational training. Concerning IT literacy when it comes to using digital solutions in foreign language teaching, 80% of the participants use basic tools word processors, presentation software, video, and internet search engines, and 52% can work with more advanced tools and software available on educational platforms including AR applications, XR applications, educational games; 28% can use developmental tools with minimal coding for teaching/learning purposes and 12% can use programming platforms for teaching/learning purposes. Regarding digital solutions in foreign language teaching before the Covid-19 pandemic, 84.6% used digital solutions. Currently, only 26.9% of the participants are teaching with various online solutions. What is more, 76.9% are searching for solutions that allow individualization of classes, 73.1% are creating forms of assignments that require students to use online resources, 76.9% are using pre-prepared published material in the class, 84.6% are engaging students in more active participation, 50% are individualizing the learning experience and 3. 8% are aiming to make the lesson more attractive. 84.6% attended trainings regarding IT skills development for teaching purposes. The following are the digital tools that teachers use to prepare language classes: kahoot, quizlet, educaplay, PowerPoint, socrative, youtube, MOOC, e-Learning Platform, e-Dictionaries, e-Translation Services, Webex, edpuzzle, nearpod, genially, mindmup or MindMeister, roundme, Microsoft word, youtube, scratch, email, excel, pixton, AR apps, google drive, zoom, hot potatoes, google earth, mentimeter, quizzes, wakelet, padlet, Moodle, Google Drive, Oculus Rift for older VR applications, and online educational games.

b) Czech Republic

Regarding vocational training, participants responded that they are actively engaged in vocational training. Concerning IT literacy when it comes to using digital solutions in foreign language teaching, only 43.3% of the participants are using basic tools: word processors, presentation software, video, and internet search engines; 56.7% can work with more advanced tools and software if available on educational platforms and AR applications, XR applications, educational games. Within the focus group no one can use developmental and programing tools with minimal coding for teaching/learning purposes. Regarding digital solutions in foreign language teaching before the Covid-19 pandemic, 53.3% used digital solutions before the pandemic. Regarding years of experience teachers have in running language classes using online tools 13.3% have 2 years of practice, 10% have 3 years of practice, another 10% have 0 years of practice, and 6.7% have 4 years. And the remaining 60% have a different number of experience, on a scale from half a year to 10 years. Regarding the use of online solutions, 90% are searching for online solutions that allow individualization of classes, 63.3% are creating forms of assignments that require students to use online resources, 33.3% are using it in their classes as opposed to pre-prepared published material, 76.7% are engaging students into more active participation, 56.7% are individualizing the learning experience and 3.8% are aiming to make the lesson more active. Of the participants, 53.3% attended training regarding IT skills development for teaching purposes. The digital tools that teachers use to prepare language classes include live streaming and messaging software such as Zoom, MS Teams, Skype, Loom, OBS, Spatial Chat online classrooms. Others used are collaborative and learning platforms such as Google Classroom, Flip, Edpuzzle, Socrative. Furthermore, Quizlet a web-based tool that delivers flashcards and study aids is also popular, as well as Moodle. Wordwall and Filippity. Generally, platforms for interactive animated content, as well as applications for online paid language courses are at the top of the list. Further findings showed that 90% (27 participants) had never heard of Oculus in foreign language teaching. The participants are familiar with the following XR tools for language teaching: 86,7% Duolingo, 20% Babbel, 10% Polyglot, 3.3% Mondly AR, 3.3% VirtualSpeech, 3.3% ImmerseMe, 3.3% FluentU, 0% NounTown, 0% Crystallize and 13.3% with

none of the above. Despite this, 56.7% strongly believe that XR language learning tools could benefit language learning/teaching and 43.3% have expressed that *maybe*.

c) Greece

The study conducted a questionnaire and a focus group discussion in Greece to gather insights about using technology for foreign language learning among refugee women and women facing fewer opportunities. The questionnaire was distributed between March and April 2023, with 26 participants, 6 men and 20 women, primarily aged between 31 to 35 years old. Most participants had university or master's degrees and taught foreign languages . They exhibited varying levels of IT literacy, with some comfortable with advanced tools like AR and XR applications, while others were only familiar with basic tools. The most common problems that refugee women and women with fewer opportunities encounter in the Greek community are the following: racial inequality (53.8%), financial inequality (38.5%), digital illiteracy (34.6%,) language barrier (69.2%), cultural barrier (57.7%), educational inequality (46.2%), financial difficulties (73.1%), social support (38.5%), health services (15.4%), transport exclusion (15.4%). Regarding any support programs for refugee women or women with fewer opportunities in the field of FLL (Foreign Language Learning) 30.8% of the participants stated that they were not aware of any programs, and 46.2% responded that they are aware of programs offered from governmental and non-governmental organizations for learning foreign languages. 5% answered that they might know such programs. A total of 57.7% agree that digital solutions may help refugee women and women with fewer opportunities to further their development. The participants used a wide range of digital tools in language teaching, such as Kahoot, Quizlet, PowerPoint, YouTube, MOOCs, e-learning platforms, and more. Although most were not familiar with XR tools, many believed that they could benefit language teaching. Commonly used VR/XR tools included Mondly, Babbel, and Duolingo. The focus group consisted of 8 refugee women from Ukraine, aged between 19 and 69. Their experiences highlighted the

challenges of Greek language learning, bureaucratic processes, and recognition of foreign diplomas. The findings indicated that XR tools had potential benefits, including improved collaboration and understanding, and making learning fun. Participants expressed a strong interest in using mobile phones for language learning, though some mentioned challenges in online courses, preferring traditional classroom teaching. While many felt that learning with technology was feasible, some older participants expressed difficulties with technology-mediated learning. In summary, the research revealed that while there is interest in using technology for language learning among refugee women and those with fewer opportunities, there are various challenges, including age-related preferences and the need for engaging teaching methods.

d) Poland

The questionnaire was distributed among professional language teachers and trainers, whose experience, in a few instances, goes beyond 15 years of experience. 79% declared that they had been using digital technology in the classroom even before the COVID-19 pandemic forced online schooling and 69% continued to develop their digital skills by taking part in various trainings and seminars. The overall results show that the majority of respondents were limited in the variety of tools they use, however over 60% declared that the use of XR tools may prove to be a valid assistant in learning foreign languages. 30% declared that they use basic tools (word processor, presentation software, video, internet search engine) in the classroom. 15% admitted to using development platforms as a way to foster FLL. The remaining 55% felt positive about working with more advanced tools and software when available on educational platforms (AR apps, XR apps, educational games). However, when asked, the group of respondents could not provide a coherent list of tools that prove to be useful in language training. The range of answers was vast and included the following answers: Kahoot, WordwallPadlet, Quizlet. Furthermore, learning apps and other digital tools that were mentioned included: Baamboozle, Flippity, Vocaroo, Edpuzzle, Quizizz, Anwerfarden, Kreator Krzywek, DeepL, Memrise, Pearson

English panel, Jamboard, Genially, Gardenanswer. It is unclear from the responses how frequently each tool or application is used or for what specific educational purposes they are used. However, the list provides some insight into the tools and applications that are commonly known and used by the respondents for educational purposes. In conclusion, the questionnaire distributed among language trainers and teachers, concerning access to technology showed that, from their experience, they work with people who are limited to the use of smartphones or laptops, and a lower degree, with participants who also identified other tools, yet the VR component in these tools was missing.

The research also showed respondents' knowledge about the most common difficulties among learners with fewer opportunities, that do not allow them beneficial FLL. These included the following answers: Financial inequalities, digital illiteracy, language barrier, cultural barrier, educational inequality, and financial difficulties. Therefore, further investigation was done into the needs of actual women refugees (in this case Ukrainian refugees). The focus group interview took place on the 18th of April, 2023 at Dom Uchodzcy (Refugee House) in Lodz run by the Lena Grochowska Foundation. The common answer given by all respondents involved 3 key elements: Language barriers, employment, and financial support. Language barrier, which does not allow them to take up occupations in their respective fields. This is in line with institutions not recognizing their University Diplomas. This causes the participants to take up any available jobs that the market has to offer. What is more, the group also focused on the inability to find employment, which ties in with the mentioned language barrier and lack of credentials. This, as a result, leaves them with a lack of sufficient funds to provide for themselves and their children, leaving very little or none for furthering their language training. These elements form a circle of three factors, which complement themselves and do not allow the respondents to further themselves in the job market. When asked about access to technology all participants mentioned having smart devices including tablets, smartphones, and laptop access, however, these were only used for entertainment purposes and did not reveal any VR experience of the focus group.

2.3 Summary

In conclusion, the research conducted by the consortium consisting of four partners provided valuable insights into the state of XR (Extended Reality) developments in language learning in their respective countries. In Cyprus, desk research revealed examples of good practices in using VR technologies for learning and teaching, particularly in the fields of STEM education and extracurricular programs. ERASMUS co-funded programs and AR applications were also explored. In the Czech Republic, the research focused on the implementation of VR tools in primary and secondary schools for natural sciences learning, with limited mention of XR tools for language learning. However, the increased wave of immigrants led to discussions about using digital technologies and virtual reality to teach the Czech language to foreigners.

Greece showed a trend in using AR for English vocabulary instruction, specifically for students with intellectual disabilities. The study demonstrated the effectiveness of AR in providing vocabulary instruction and highlighted its potential for students. In Poland, various companies and start-ups were identified as offering XR foreign language learning solutions, with examples of a prototype language teaching tool in the VR space. However, the research revealed limited familiarity with specific XR tools for language teaching among the participants.

The focus group and questionnaire findings provided additional insights. In Cyprus, teachers showed a significant level of IT literacy and familiarity with various digital tools for language teaching. They emphasized the importance of individualization and active student participation in language classes. In the Czech Republic participants expressed interest in online solutions that allow individualization of classes, but their familiarity with XR tools for language teaching was limited. In Greece, teachers demonstrated a moderate level of IT literacy and a preference for digital solutions before the COVID-19 pandemic. Most

https://xrwomenproject.eu

participants expressed a positive attitude towards learning a foreign language in an extended reality setting. In Poland, trainers had limited familiarity with a variety of tools but expressed potential interest in using XR tools for language training.

The focus group interviews with women refugees highlighted the challenges they face in finding employment due to language barriers and lack of recognized credentials. However, they had easy access to technology, including smart devices and internet access, which they used for entertainment and communication. Overall, the research findings provide valuable insights into the current state of XR developments in language learning across the consortium's respective countries. The information guided us to the development of the XR toolkit. It allowed us to create one that would consider approaches for language teaching and learning, with a focus on individualization, active participation, and addressing the specific needs of diverse learners with a focus on women with fewer opportunities.

3. XR Toolkit Best Practices

The following table presents a list of various tools and applications that foster Foreign Language Learning (FLL) in digital and XR/AR environments. Please make yourself familiar with the most popular tools, choose your preferred, and enjoy your experience in learning a new language!

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3.1 Best Practices

XR Tool Name	Supported language	Instruction needed to use the tool	Benefits of using the tool
Noun Town	Japanese, Korean, Chinese, Spanish, French, German, and Italian	Noun Town includes basic instruction in Japanese, Chinese, Spanish, French, German, and Italian. This includes stuff like numbers, greetings, questions, colors, and phrases to get you started on your language-learning adventure. However, it is limited to a few countries.	Fully immersive and interactive Watch: https://www.youtube.com/@NounTown_VR_game
Mondly	All major languages	Mondly is a website and app designed to help you interactively learn languages. To get started, you will need to choose your native language and the language you want to learn. From there you can set your difficulty level and pick topics to perform lessons on vocabulary and conversation. Choose the source language and target language and then your difficulty level	The app focuses on phrases, not individual words. You can listen to native speakers. You can practice real conversations. You will solidify your knowledge using a unique repetition system Watch: https://www.youtube.com/@Mondlylanguages

Language Lab	All major	The concept of the tool is an integrated solution is that of combining all faces of language lab classwork and homework into a single platform that uses a common database for classroom activities, self-study activities, homework activities, pronunciation activities, sign language activities, etc.	Everything you hear inside the app is in the target language you've selected, with no translations or explanations. In Language Lab, you'll typically find yourself in a scene with plenty of objects whose names you'll hear when you handle them. A pre-programmed avatar will give you instructions, such as "Put the spoon in the cup," in the language you've selected, and you can manipulate the objects until you manage to follow the instructions. What's different about Language Lab is that everything you hear is in the language you're learning. You'll associate everything you see and do directly with the new vocabulary as you learn it rather than translating from your first language. Watch: https://www.youtube.com/@DirectLanguageLab
Babbel		Babel is an entire, comprehensive language course in the form of an application for your phone. Importantly, there is more than just vocabulary in Babbel. In addition to this, the app's creators have prepared grammar explanations that explain all new structures, as well as separate grammar exercises. In addition, we do not skip learning pronunciation either, and the cultural notes allow us to better understand the context in which the language influences the culture and the culture influences the language. Therefore, in addition to vocabulary and grammar, we also learn the names of cities, rivers, and the most important organizations. There is also a lot of colloquial language and various sayings in Babbel. In the general courses, learning is based on dialogues from everyday life. Each course is divided into	Babbel is far better and more professional than many others. The platform is well-funded and the lessons are developed by in-house linguists rather than community contributors. However, it still lacks important languages like Japanese, Chinese, and Arabic. But you're going to learn how to effectively and naturally communicate with people by clicking around a gamified web app, matching pictures, and filling in the blanks. Watch: https://www.youtube.com/@BabbelPlus

		individual lessons, which are subdivided thematically and introduce students to the new language step by step.	
ImmerseMe	Spanish, English, French	In IMMERSE, instructors can create scenarios and assign groups of students within authentic contexts. Some examples of "experiences" that are suitable for ESP purposes are Networking Events, the News Station, the Hotel Room, the Resort, Airport Departure, the Doctor's Office, etc.	Many disciplines could benefit from this type of practice such as "Public Communication", "Tourism and Hospitality Management", "Nursing", etc. Watch: https://www.youtube.com/watch?v=s6H5A6eEwh8&ab_channel=MetaQuest
Memrise	All major	Some courses are created based on textbooks - these are, for example, chapter-by-chapter repetitions prepared by students using a particular book. Such sets will not always be logical for someone who is learning from other materials. Thematic sets are useful when you want to expand your vocabulary in a particular area. Legal French, business Spanish, or medical Norwegian can be conveniently brushed up by finding suitable courses with specialized vocabulary.	You learn words and then phrases and sentences built from them. This will help you assimilate the grammatical rules of a foreign language and teach you how to create longer utterances. Language learning with Memrise is filled with audio and video recordings from a wide variety of native speakers. The app's creators took people from the street, put them in front of a camera, and had them say the phrases you learn in the course. This way you get to listen to a lot of different accents and ways of speaking. Watch: https://www.youtube.com/@memrise

Virtual Speech	English, Greek	You need an account creation. You'll learn the fundamentals of a topic through tutorial classes, example videos, quizzes, and more. You'll then get to practice what you've learned online or in VR.	86% of users felt more confident after using VirtualSpeech training, 95% of respondents said they had improved their soft skills with VirtualSpeech, 93% of learners would recommend VirtualSpeech to a colleague, 95% said that practicing in VR helped them prepare better for real-world situations, and 91% of users would like to see more VR training at their organization. Watch: https://www.youtube.com/watch?v=rBIOO7JHyJA&ab_channel=VirtualSpeech
Rosetta Stone	All major languages	One of the most well-known language-learning apps is without a doubt Rosetta Stone. You can learn to speak, read, write, and comprehend simple words and phrases by using the Rosetta Stone consistently for a few months. Using object-recognition technology that leverages augmented reality the app turns everyday objects into conversation practice It enables users to point their phone camera at an object receive a translation in their language of choice, and then practice conversation using the newly obtained vocabulary.	The content that Rosetta Stone is offering is interactive and makes you want to continue until you finish your lessons. It has many courses that teach you how to deal with various situations in a new language, live coaching, stories (that you can listen to or read aloud), audio files with native speakers (that you can download to your computer or phone), and a separate lesson about mastering the alphabet. Watch: https://www.youtube.com/@RosettaStone

Duolingo	All major languages	Learning a new language at your own pace, anytime and anywhere, using any device. No need to download or install anything; you'll have immediate access to all the latest features. One can enjoy the convenience of the language learning program, available on any device, including a mobile app. Additionally, you can download lessons to your mobile device for offline learning.	The app is free. The app on your phone is always with you, you can use every free moment to practice. Possibility to learn by listening. Includes feedback - if you don't do the lesson to the specified percentage, they won't let you continue. It also takes the form of Gamification - Motivates gives rewards for completing the plan you set, and points for perfectly completed tasks. Watch: https://www.youtube.com/@duolingo
Busuu	English, Spanish, French, Dutch, German, Italian, Portuguese, Chinese, Russian, Japanese, Arabic, Turkish, Polish and Korean	Busuu incorporates the communicative elements of social learning into self-study language learning. Through its website and mobile apps, Busuu offers free and Premium access to 12 language courses, taught in 15 interface languages. Busuu offers courses based on CEFR levels A1, A2, B1 and B2. The platform encourages collaborative learning by allowing members to practice their writing and speaking skills with help from native speakers of the language they are learning.	Busuu provides live group lessons about any topic, where you can practice by talking with native speakers and other students. Another interesting aspect of this language-learning software is that it gives you short exercises, which are later corrected by people who speak the language as their mother tongue. Visit: https://www.youtube.com/@busuushorts

Panolingo	English	Panolingo is the 1st VR Language App in the World which will give you a real language experience. Collect points and bonuses, get into the next levels, share your score, and compete with your friends. Track your progress and test yourself. High-quality 360 panoramas will make you feel like an explorer of the places you already know, like home, car, or restaurant.	The 1st Language Application which thanks to 360 panoramas allows learning from the context. It's new, intuitive learning. Visit: https://educraft.tech/panolingovr/
Drops		Drops is a language-learning app that takes a different approach to learning. It's designed for visual learners, so it uses pictures and videos to help you learn new words and phrases. It has been tested for Ukrainian refugees	PROS: Visual aids link a sound, image, and word together to help remember it better. The attractive layout makes it easy to use. Gamification encourages you to maintain your learning streak. CONS: There were unequal repetitions of the words in lists. Some returned over and over while others seemed to turn up only once. Some images look very similar, which is confusing and leads to errors. A voice says the words, so you hear them when they appear. But there aren't any speaking or pronunciation games to encourage you to practice those skills. Find out more: https://languagedrops.com/ukraine

EduAR	English, Greek	Research results showed a functional relationship between the correct responses made during probe sessions and the implementation of the AR intervention. In addition, a follow-up phase was conducted to evaluate the maintained outcomes, suggesting that there was a positive maintenance effect. Social validity was also assessed, indicating that the intervention package was practical and useful.	EduAR is a framework that employs state-of-the-art technologies in the fields of Computer Vision, Speech Synthesis, and Augmented Reality to provide a holistic toolset for the cultivation of cognitive skills. Aligning with the latest teaching methodologies, EduAR's main target is to assist students in building links between words (notions) and verbal and visual representations. Gamification is the core of the EduAR education process. Find out more:
Mondly VR	All major languages	Mondly VR provides an immersive virtual reality environment that allows you to engage with the language more realistically and interactively. You can explore virtual settings, interact with objects, and practice conversations, making the learning experience more engaging and memorable. Mondly VR utilizes speech recognition technology to evaluate your pronunciation and provide instant feedback. This feature helps you improve your speaking skills and develop more accurate pronunciation. It also allows you to explore different virtual environments that reflect various cultures and countries where the language is spoken. This feature provides cultural context, exposes you to different traditions, and enhances your understanding of the language within its cultural context. The	Mondly VR can be used as a supplementary tool alongside traditional language learning methods. It offers a unique and immersive experience that complements textbooks, audio lessons, and other resources, enhancing your overall learning process. The interactive and immersive nature of Mondly VR keeps learners motivated and engaged throughout the language learning journey. The gamified elements, realistic scenarios, and instant feedback help maintain interest and increase the enjoyment of learning. Remember that while Mondly VR offers many advantages, it should be used as part of a well-rounded language learning approach that includes regular practice, exposure to native speakers, and other language resources. Watch: https://www.youtube.com/watch?v=LUiSutk7Wso&ab_channel=MondlybyPearson

		virtual conversations in Mondly VR allow you to practice real-life dialogues with virtual characters. This interactive feature helps you develop conversational skills, improve your comprehension, and gain confidence in using the language in practical scenarios.	
Greek for Refugees	English, Greek	Learning Greek is a primary goal for refugees living in Greece. "Greek for refugees: Xenios Zeus" includes a welcome guide and support material that will help the learners get acquainted with the city of Thessalonikι. The primary learning objective of this course is to help the learners develop basic communication skills, useful for everyday life in Greece (level A1, according to the CEFR).	Find out more: https://opencourses.auth.gr/courses/ZEUS101/

Czech Left Behind	Czech	The "Czech Left Behind" mobile learning app is used to practice Czech as a second language. It is designed primarily for pupils with a different mother tongue who are studying at a Czech primary school or preparing to study at secondary school. However, it can also be used by other users who want to practice Czech. It contains basic communication topics and specialized topics of primary school subjects. It is a supplement to the textbook Left Back 1.	The year-long course combines the teaching of Czech as a second language with the teaching of basic topics from four subjects commonly taught in primary school for a total of 1,140 hours per year. This increases students' chances of success in the entrance exams and, most importantly, makes it easier for them to make the transition to secondary school in the Czech Republic. The Left Behind I (2018) includes: a curriculum focused on teenage life, 12 basic communication topics at levels A1-A2, practice in reading, writing, speaking, and listening, an introduction to Czech realities, many activities to practice pronunciation, many illustrations, a modern and clear design. Find out more: https://ceskylevouzadni.cz/app/ Also explore: https://levouzadnionline.cz/

WocaBee	Czech, Slovak, German, Ukrainian, English, Spanish, French, Polish, Hungarian, Croatian	WocaBee training for teachers: https://wocabee.app/app/edu/2022-03-31/stream/?lang=CZ&token=WB_VIP_asSV7Wqax9	WocaBee is a new app that significantly helps students learn the foreign vocabulary of any language quickly, easily, and efficiently. The teacher manages the class: and adds word packs, for example, once or twice a week. Pupils practice the vocabulary in the form of homework. The teacher can see who has completed the homework and which words are difficult for the pupil to learn. Benefits: No need to install anything. Works on any device (phone, tablet, computer). Uses artificial intelligence. Plays and learns at the same time. The app can also read the words (pronunciation). Find out more: https://www.wocabee.app/
Expeditions	Arabic, French, German, Italian, Hindi, Korean, Portuguese, Russian, Spanish, Chezch, Welsh, Japanese	Google Cardboard is an HMD (Head Mounted Display) that adapts to the user's head and is responsible for immersing the user in the simulated world through the digital representations projected by the smartphone. Inside the Cardboard, two optical lenses exist, creating the necessary sense of depth, and two magnets are responsible for triggering the phone's touch sensors, enabling a form of interactivity.	In relation to the cognitive effects of this medium, there was a marginal improvement in students' performance taught with the aid of VR, as opposed to those taught without it, confirming that it has the elements to stand out as a beneficial learning tool. VR allowed students to visualize new information and helped them construct the necessary subconscious patterns required to turn theory into substantive knowledge. Find out more: https://artsandculture.google.com/project/expeditions

Welcome	English, Greek, German, Arabic, Spanish, French, Catalan	WELCOME will deliver a mobile device-based platform, which will facilitate the interaction of Third Country Nationals TCNs with virtual agents and a desktop-based solution for the support of authorities. WELCOME will achieve significant impacts in several areas, including: ● Quality of the TCN reception and integration practices ● Protection of vulnerable groups in our society ● Efficiency of public administrations to manage TCN reception/integration ● Solutions for intelligent conversational personal assistants and coaches	WELCOME will validate the developed platform as a whole as well as each of its technologies through three different use cases: o TCN reception and orientation o TCN integration o Support of TCN's living in the host country In all three use cases, the authorities will be provided with targeted decision-support technologies. Find out more:
LingoDeer	English, German, Portuguese, Spanish, French, Chinese, Japanese, Korean, Chinese	The website and mobile apps for the self-study program LingoDeer offer both free and paid classes in 10 different languages. Wang Zhulong, the creator of ChineseSkill, launched LingoDeer, which has operations in Beijing and Hong Kong. The program uses brief, gamified lessons, interactive quizzes, written explanations, audio, and graphics to teach users the alphabet, grammar, and vocabulary.	Although LingoDeer is less well-known than some other language learning applications, it is still superior to most of them in terms of quality and cost. By completing a wide variety of exercises, you'll get plenty of language practice. They also provide you several opportunities to evaluate what you've learned and plenty of grammar explanations. Overall, it's one of the better methods for beginning a language learning process. Find out more: https://www.lingodeer.com/learn-languages/en/es/learn-english-online

Table 1: XR Toolkit of Best Practices

3.2 VR TOOL

The Oculus Quest is a virtual reality (VR) headset developed by Oculus, a division of Facebook. It was first released in May 2019 and has gained popularity for its standalone nature, meaning it doesn't require a PC or external sensors to operate. The Quest offers immersive VR experiences with its built-in sensors and tracking capabilities, allowing users to freely move around in virtual environments. It has two handheld controllers for interacting with the virtual world and offers a wide range of games and applications through the Oculus Store. In addition, the Oculus Quest 2, a successor to the original Quest, was released in October 2020 with improved specifications and features.

Here are some key features and details about the product:

Design and Display: The Oculus Quest has a sleek and compact design, with the headset and computing power integrated into one device. It features a high-resolution OLED display with a resolution of 1832 x 1920 pixels per eye, providing a sharp and clear visual experience.

Tracking and Controllers: The Quest utilizes inside-out tracking, which means it uses built-in sensors and cameras to track the user's movements in the real world, enabling them to move freely in the virtual environment. It comes with two handheld controllers that provide intuitive and precise input for interacting with virtual objects.

Content and Software: The Oculus Quest offers a wide range of virtual reality content through the Oculus Store. This includes games, experiences, social apps, and multimedia applications. Many popular VR titles have been optimized for the Quest, and new content is regularly added to the store.

Performance and Specs: The Oculus Quest is powered by a Qualcomm Snapdragon 835 or Snapdragon XR2 processor (depending on the model). It has 4GB or 6GB of RAM and offers different storage options, such as 64GB or 128GB, to store games and apps. The Quest 2, the newer model, features improved specifications, including a more powerful XR2 processor, 6GB of RAM, and a higher-resolution display.

Overall, the Oculus Quest offers a convenient and accessible VR experience, allowing users to enjoy immersive content without the need for additional hardware. Its standalone nature and broad range of available experiences have made it a popular choice among VR enthusiasts. You will need this tool when accessing the following language apps:

Mondly VR: Mondly is a popular language-learning app that also has a VR version for the Oculus Quest. It offered interactive language lessons in virtual environments, enabling users to practice speaking, listening, and vocabulary in a more engaging way.

Immerse: Immerse is a VR language platform that allows users to practice speaking with native speakers in virtual scenarios. It aimed to provide a more realistic and conversational language learning experience.

For more information go to the tool website: https://www.oculus.com/rift-s/

4. RECOMMENDATIONS

Here are 5 tools that we decided had the best solutions for using technology in the furthering of foreign language learning. Two tools are fully integrated XR and require the use of Oculus Quest, while three are general apps that allow for one's furthering of language expertise.

4.1 Mondly VR

We would highly recommend Mondly VR as an excellent tool for learning foreign languages, particularly for women facing fewer opportunities. Mondly VR provides an immersive and interactive language learning experience through virtual reality, offering a unique and engaging way to study languages.

Here's why Mondly VR can be a great choice:

Immersive Learning Environment: Mondly VR allows users to step into virtual environments and interact with objects and characters in the target language. This immersive approach makes language learning more engaging, enjoyable, and memorable.

Interactive Lessons: The app offers interactive lessons that cover various aspects of language learning, including vocabulary, grammar, and pronunciation. The lessons are designed to be user-friendly and accessible, making it suitable for learners of all levels, from beginners to advanced.

Conversational Practice: Mondly VR provides opportunities for learners to practice their speaking skills in virtual conversations. Engaging in dialogues with virtual characters helps build confidence and improve fluency in a safe and supportive environment.

Personalized Learning: The app adapts to the learner's progress and adjusts the difficulty level accordingly. It provides personalized feedback and recommendations, ensuring that learners can focus on areas where they need improvement.

Multi-Language Support: Mondly VR offers a wide range of language options, including popular languages like English, Spanish, French, German, and many more. This variety allows learners to choose the language they want to study, making it suitable for women with diverse language learning needs.

Accessible Anytime, Anywhere: With the Oculus Quest VR headset, learners can access Mondly VR from the comfort of their own homes, making it convenient for women who may face restrictions or have limited access to traditional language learning resources.

Empowering and Inclusive: Mondly VR offers an inclusive learning environment that can be particularly empowering for women facing fewer opportunities. It provides a safe and supportive space for self-paced learning, allowing women to gain confidence and skills in foreign languages.

It's important to note that while Mondly VR can be a valuable language learning tool, it should be used as a supplement to a comprehensive language learning approach. Combining virtual reality experiences with other resources such as textbooks, online courses, and real-world practice will provide a well-rounded language learning experience.

Overall, Mondly VR has the potential to be an effective and empowering tool for women seeking to learn foreign languages. Its immersive nature, interactive lessons, and personalized approach make it an engaging and accessible choice, helping women overcome barriers and expand their language skills.

4.2 ImmerseMe VR

At present, ImmerseMe provides learning resources for nine different languages: German, Spanish, French, English, Japanese, Chinese, Italian, Greek, and Indonesian. Once a learner has chosen their desired language, they are prompted to select a lesson centered around a specific communicative scenario. To illustrate, various lesson options are available to German learners, such as ordering coffee in a café or making a purchase at a chocolate shop. Upon initiating a lesson, learners watch a video depicting a real-life communication situation, with the spoken words of the interlocutor displayed at the top of the screen. Once the interlocutor finishes speaking, learners can choose from several possible responses presented in the middle of the screen. By clicking the green microphone button at the bottom of the screen, learners can activate their microphone. Their spoken response is recorded, transcribed at the bottom of the screen, and then evaluated. If their pronunciation doesn't match the expected standards, they need to repeat the response.

All videos are filmed using a 360-degree camera and captured from the learner's perspective. Learners using a regular computer can adjust their view with their mouse to explore their surroundings. Those using virtual reality goggles experience an even more lifelike representation of the situation, as changing their gaze alters their perspective of the scene. However, ImmerseMe faces certain challenges. It's uncertain if an adequate focus on meaning can be achieved in the tasks, as learners might prioritize form over meaning. The system also struggles with providing accurate feedback and automatic diagnosis of pronunciation errors. The voice-recognition technology's transcription isn't consistently precise, occasionally omitting words and inaccurately assessing intentionally incorrect pronunciations. Consequently, the feedback offered is lacking, and the evaluation of pronunciation remains unclear.

Authenticity is a core aspect, with ImmerseMe's design aiming to simulate real-world interactions with native speakers. The tasks are specific to different situations, and the videos are recorded at a natural pace of speech. Despite this, the authenticity of the tasks has certain shortcomings. Users aren't necessarily required to understand the spoken content since they can rely on transcriptions and translations. The fixed set of response options limits the practice of producing genuine responses, potentially encouraging learners to merely read from the screen. This approach might aid pronunciation improvement but doesn't contribute to enhancing communicative skills. Intermediate and advanced learners, in particular, need opportunities to engage in meaning negotiation, as it prompts the production of more accurate target-like utterances.

The Immerse Virtual Reality Headset is a budget-friendly option for those looking to dive into the world of mobile VR. Its affordability and impulse-purchase appeal make it an attractive choice for individuals who may not have been initially interested in VR. While it shares similarities with Google Cardboard, the Immerse VR (works on Oculus Go, Oculus Quest 1/2, Oculus Rift, HTC Vive/Vive Pro, HTC Vive Focus, and Pico) offers a slightly enhanced experience.

However, the Immerse VR does have some limitations that detract from its overall functionality. One major drawback is the inability to access the device while it's inside the headset. Users have to repeatedly open the headset to make adjustments or interact with the phone or apps. Additionally, the limited compatibility with Bluetooth controllers restricts the number of apps and games that can be enjoyed fully. Another downside is that the headset does not accommodate glasses, requiring users to remove their glasses and potentially causing eye strain after extended periods. The design of the Immerse VR Headset, with its large black box protruding from the face, may not appeal to everyone. It can look awkward, particularly when used in public settings where others may not be familiar with VR technology. While it isolates the user from the surrounding environment, which can be beneficial for immersion, it also creates a disconnection from others.

Immerse Education Ltd. has received numerous positive reviews from satisfied participants. Students have praised the program for its educational quality, supportive mentors, and the opportunity to connect with peers from around the world. Many users expressed their appreciation for the Immerse Education scholarship program, which provided them with a discounted opportunity to gain insights into their college course through an essay competition. They found the experience beneficial and enlightening. Others highly recommended Immerse Education, emphasizing the chance to make lasting friendships with students from different countries. They praised the well-prepared academic curriculum, designed by top professors, which made learning comprehensive and enjoyable. Students shared their positive experiences, highlighting the academically challenging classes and the tutors' provision of excellent information, which aided in expanding their knowledge. They also emphasized the approachability and friendliness of the mentors, as well as the potential for lifelong friendships with students from diverse backgrounds. Some described their time with Immerse Education as an excellent program filled with valuable learning opportunities and support. Participants in the Oxbridge Online Research Programme expressed their gratitude and stated that the program exceeded their expectations, considering it a superior alternative to traditional school teaching. Other reviewers mentioned how Immerse Education made them happy by hosting an essay competition, indicating their appreciation for the program's initiatives and engagement. Generally, users reflected on the virtual program, acknowledging that despite being an unprecedented experience, they were able to learn a lot and connect with students from all over the world. Several reviewers commended Immerse Education for its specialist teaching approach, which aimed to stimulate further inquiry rather than providing simple answers.

4.3 Mondly App

Mondly is an exceptional language-learning app that offers a wide range of features and benefits that can be particularly advantageous for women in various situations. Here's why we believe Mondly can be an excellent choice:

Accessibility and Flexibility: Mondly allows users to learn languages at their own pace and convenience. It can be accessed from a mobile device, providing flexibility for women who may have limited access to traditional language learning resources or have busy schedules.

User-Friendly Interface: The app offers a user-friendly interface that is easy to navigate and understand. This makes it accessible to learners of all levels, including beginners who may be new to language learning.

Interactive Lessons: Mondly provides interactive language lessons that engage users in various exercises and activities. This interactive approach helps in retaining knowledge, enhancing comprehension, and building practical language skills.

Extensive Language Options: Mondly supports a vast selection of languages, covering major languages spoken worldwide. This broad language selection ensures that women can find the language they want to learn, making it suitable for diverse language learning needs.

Speech Recognition Technology: Mondly utilizes speech recognition technology to offer pronunciation feedback and improve speaking skills. This feature allows women to practice their pronunciation in a supportive and non-judgmental environment.

Gamified Learning: The app incorporates gamification elements to make language learning enjoyable and engaging. It offers rewards, challenges, and progress tracking, which can motivate women to stay committed and achieve their language learning goals.

Cultural Insights: Mondly not only focuses on language proficiency but also provides cultural insights related to the target language. This aspect can be particularly beneficial for women interested in understanding different cultures and broadening their worldviews.

Personalized Learning: The app offers personalized learning experiences by adapting to the user's progress, interests, and preferences. This personalized approach ensures that women receive tailored language learning content that meets their individual needs.

Offline Mode: Mondly offers an offline mode, allowing users to download lessons and practice languages even without an internet connection. This feature can be advantageous for women who have limited or unreliable access to the internet.

Affordability: Mondly provides free access to some features and offers affordable subscription options to unlock additional content and advanced features. This pricing structure makes it accessible for women facing financial constraints or limited resources.

In conclusion, Mondly is a highly recommended language-learning app for women with fewer opportunities. Its accessibility, user-friendly interface, interactive lessons, extensive language options, gamified learning, and cultural insights make it a valuable tool for learning foreign languages effectively and conveniently.

XR-WOMEN

4.4 Babel App

Babbel is a language learning app that offers several positive features that make it a valuable tool for language learners. The well-designed Spanish and French courses stand out, providing an immersive experience with carefully selected vocabulary and dialogues based on real-life situations. The lessons introduce useful language and incorporate natural-sounding conversations, making the learning process engaging. The Italian course also receives praise for its quality and usefulness. The difficulty levels of the courses are well-balanced, allowing learners to progress logically from simple to challenging content. The vocabulary is thoughtfully selected, focusing on everyday situations and enabling learners to acquire useful language skills. The repetition of phrases within lessons aids memory retention, contributing to effective learning. The "speaker" option on individual lines is highly beneficial, allowing learners to listen to audio repeatedly before moving on. This feature proves especially useful at higher levels when dealing with longer sentences. The comprehension sections in the better courses enhance learning by forcing learners to think in the target language without relying on translations. Babbel employs reinforced learning techniques, requiring learners to review and master the material before advancing. This approach helps maintain focus and prevents lazy answers. The additional review section at the end of the lessons further reinforces learning. The user experience is user-friendly, with an uncomplicated interface that makes navigation easy. The app's affordability, especially for courses with quality content, is an attractive aspect for budget-conscious learners. The mobile app's convenience enables learning on the go, with seamless synchronization across Apple and Android devices. One of Babbel's standout features is its podcasts, which offer uninterrupted listening in the target language. This immersive listening experience allows learners to develop a deeper connection with the language. However, it is worth noting that the podcasts are only available in Spanish, French, German, and Italian, which limits their accessibility.

Despite these positives, there are some significant downsides to consider. The distribution of lessons across levels is uneven, with more emphasis on beginners and intermediate learners. Advanced learners may find the lack of advanced content disappointing, and some languages may not even have an advanced section. One limitation of Babbel is its focus on vocabulary and grammar, lacking a truly immersive experience. Language absorption requires spending time with the language, and more extensive listening material would be beneficial to develop a better feel for the sound of the language. The courses, except for Spanish and French, may not adequately prepare learners for real-world conversation. The lack of natural interaction and speaking opportunities limits progress and may lead to reaching a plateau in language proficiency. Another drawback is the disparity in quality and consistency across languages. Some languages have extensive content with meticulous attention to detail, while others feel unfinished or offer limited progression. The interactive exercises within the lessons may not be enjoyable for everyone, as they can slow down the pace and become monotonous. Multiple-choice, fill-in-the-blanks, and matching exercises may feel uninspiring and discourage learners. Certain narrators may frustrate beginners, as their speech can sound unnatural or unclear, making it challenging to understand and progress when filling in the blanks. Technical problems, such as slow content loading and occasional issues with the "Continue" button, can interrupt the learning experience and require restarting lessons. Lastly, the pricing structure may be a disappointment considering the discrepancies in quality across the languages. It would be beneficial for Babbel to consider adjusting the pricing until the weaker courses are improved to provide a more equitable experience for all learners.

In conclusion, Babbel offers a language learning app with several positive features, including well-designed courses, appropriate difficulty levels, reinforced learning techniques, and a user-friendly interface. However, there are limitations to consider, such as uneven lesson distribution, a lack of immersion, inconsistencies across languages, less enjoyable interactive exercises, and technical problems.

4.5 Rosetta Stone App

Rosetta Stone is a language learning app that stands out from others with its immersive approach to language learning. The app's main feature is its comprehensive language courses, covering various topics from the basics to more conversational subjects. The courses utilize a unique method that immerses learners in the language right from the start. Similar to how children learn, you listen to words and phrases while looking at corresponding pictures to deduce their meanings. This active learning approach encourages deeper engagement compared to passive memorization. To cater to learners who find complete immersion intimidating, Rosetta Stone has introduced embedded translations in their courses. While the focus is still on figuring out words and phrases independently, learners can now access translations by pressing and holding an image. This addition enhances the accessibility of the lessons and provides support when needed. The app also offers additional features to complement the main courses. Seek & Speak exercises allow learners to practice their target language outside of the core curriculum. By taking pictures of objects around their house, learners engage in conversations created by Rosetta Stone. This interactive practice helps improve vocabulary retention and provides a more engaging learning experience.

The Phrasebook feature displays common words and phrases, allowing learners to listen to native speakers' pronunciations. While it is helpful for vocabulary review and pronunciation practice, its functionality is somewhat limited. Other features, such as Seek & Speak and Stories, provide more effective ways to learn and practice vocabulary. One of the most useful features of Rosetta Stone is Stories. Learners can read, listen to, and even record themselves reading short stories in their target language. This feature promotes fluency development and gradually increases in complexity as learners progress through the course. However, Stories falls short in languages with non-Latin writing systems, as it utilizes the Latin alphabet instead. Rosetta Stone does not teach writing or reading in these languages, which may disappoint some learners. Supplementing Rosetta Stone with apps like Drops or

Skritter can address this limitation. Rosetta Stone also offers live tutoring sessions and group coaching as a newer feature. Learners can practice with expert language coaches through free weekly lessons that cover conversations, grammar, and pronunciation. Private and group lessons with Rosetta Stone online tutors are also available. However, accessing multiple languages requires individual subscriptions or an unlimited language subscription. In terms of pros, Rosetta Stone successfully emulates complete immersion in a new language. The app is user-friendly, and learners have flexibility in choosing their lessons. The additional features provided by the app contribute to well-rounded language practice. On the downside, Rosetta Stone lacks writing practice and some learners may find the course progression slow. The focus is more on formal language rather than conversational language, which could be a drawback for learners seeking everyday communication skills.

In summary, Rosetta Stone offers a unique language learning experience with its immersive approach and carefully designed courses. The app's additional features enhance language practice, although certain limitations, such as the lack of writing practice and the slow course progression, should be considered. Overall, Rosetta Stone is a user-friendly app that can be a valuable tool for language learners looking for an immersive language learning experience.

5. Unlocking Language Learning Potential: Syllabuses Harnessing XR Tools

Welcome to a world where language learning transcends traditional boundaries and embraces the power of Extended Reality (XR) technologies. In this introduction, we present a collection of innovative syllabuses that harness the immersive capabilities of XR tools to revolutionize the teaching of foreign languages.

Language acquisition has always been a dynamic and multifaceted process, and now, with the advent of XR technologies, educators have an unprecedented opportunity to enhance language learning environments. Through the integration of Virtual

Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), these syllabuses showcase the transformative potential of XR tools in fostering engagement, interactivity, and cultural immersion.

Drawing upon extensive research and collaboration with language experts and technologists, these syllabuses have been meticulously designed to align with the specific needs and learning outcomes of diverse language learners. By seamlessly merging the virtual and physical worlds, XR tools provide students with authentic and context-rich language experiences that are both captivating and effective.

Within these syllabuses, you will encounter an array of immersive language-learning scenarios. Imagine strolling through the bustling streets of Paris, conversing with virtual native speakers, or exploring ancient ruins while uncovering the secrets of a long-lost civilization. XR technologies allow students to break free from the confines of traditional classrooms, enabling them to practice language skills in simulated real-life situations.

Each syllabus represents a fusion of pedagogical principles, language proficiency levels, and XR tool integration strategies. Whether you are an educator seeking to redefine your teaching approach or a student yearning for a dynamic and interactive language learning journey, these syllabuses will provide you with inspiration and practical guidance.

By exploring these examples, you will discover how XR tools can facilitate meaningful language interactions, promote cultural understanding, and enhance language fluency. Furthermore, the incorporation of XR technologies cultivates digital literacy and equips learners with essential 21st-century skills necessary for success in an increasingly interconnected world.

Embark on this immersive voyage as we present these exemplary syllabuses that harness XR tools to unlock the full potential of language learning. Prepare to be inspired, challenged, and empowered to embrace a new era of foreign language education that transcends traditional boundaries and propels us into a future where language knows no limits.

5.1 LESSON PLAN 1

BASIC INFORMATION	
Duration	60 minutes
Keywords	vocabulary learning, cultural knowledge, tourism, Greek
Materials/Equipment	XR headset and software with a virtual tour of a Greek-speaking city or tourist attraction. A map of the virtual location. A list of basic Greek vocabulary related to tourism and travel. Worksheets with exercises related to the virtual tour.
Additional Notes	Ensure proper use of the XR equipment and act as a facilitator to students during the lesson plan activities.

Lesson Plan

Aim of the activity

This lesson plan aims to introduce learners to basic Greek vocabulary related to tourism and travel.

Introduction (5 minutes):

Welcome the learners and introduce the lesson objectives.

Briefly explain the XR technology and how it will be used in the lesson.

Pre-lesson vocabulary (10 minutes):

Provide learners with a list of basic Greek vocabulary related to tourism and travel.

Review the pronunciation and meaning of each word.

XR Virtual Tour (30 minutes):

Give learners the XR headset and guide them through the virtual tour of the Greek-speaking city or tourist attraction.

Encourage learners to interact with the virtual environment by asking and answering questions in Greek, using the vocabulary they learned in step 2.

Monitor learners' language use and provide feedback and corrections as needed.

Post-tour discussion (5 minutes):

Ask learners to discuss their experience in the virtual tour, what they liked, and what they found challenging.

Encourage learners to use the vocabulary they learned during the tour.

Worksheet exercises (5 minutes):

Provide learners with worksheets that include exercises related to the virtual tour.

Review the exercises and answer any questions.

Conclusion (5 minutes):

Summarize the lesson objectives and encourage learners to continue practicing their Greek language skills.

Assessment

Learners' language use during the virtual tour and their performance on the worksheet exercises will be used as informal assessment tools to evaluate their language learning progress. Additionally, learners' feedback and comments on the lesson will be used to improve future XR language learning experiences

Benefits of the activity

XR can provide a more engaging and immersive experience for learners, which can enhance their language acquisition and retention.

XR can create a virtual environment that simulates real-life situations, which allows learners to practice their language skills in a safe and controlled setting. For example, learners can engage in conversations with virtual characters in a simulated environment or explore a virtual world where they can practice using the language in different contexts.

XR can also provide personalized learning experiences for learners. With XR, learners can receive immediate feedback on their language use, which can help them identify areas for improvement and adjust their learning accordingly.

Moreover, XR can adapt to the learners' proficiency levels and learning styles, which can enhance their learning outcomes.

Anticipatory effect of the activity

- To improve learners' listening and speaking skills in Greek.

- To provide learners with an immersive XR experience that simulates a virtual field trip to a Greek-speaking country.

- To enhance learners' cultural knowledge and understanding of the Greek-speaking world.

External resources:

Welcome guide

https://opencourses.auth.gr/modules/units/?course=ZEUS101&id=6509

 Support material

https://opencourses.auth.gr/modules/units/?course=ZEUS101&id=6515

Source: Greek for refugees: Xenios Zeus (https://opencourses.auth.gr/modules/units/?course=ZEUS101&id=6509

5.2 LESSON PLAN 2

BASIC INFORMATION	

Duration	60 minutes
Keywords	This activity aims to introduce students to XR tools for language learning and to acquaint them with the positives and limits of new technologies.
Equipment	XR devices (VR headsets, AR-enabled smartphones, or tablets), pre-prepared XR content related to the target language (pick a lesson from Mondly VR, or Mondly AR, worksheets or writing materials, projector or a screen (optional)

Lesson Plan

Aim of the activity

This lesson aims to introduce students to the learning experience through XR technologies. You can pick either Mondly VR (Virtual Reality) or Mondly AR(Augmented Reality), depending on the hardware you have access to. By the end of the lesson, students will

be able to expand their vocabulary and use new words in context and they will have an XR tool to practice language on their own at home.

The procedure of the activity

Introduction (5 minutes):

Begin the lesson by asking the students how they are, what they are going through etc. It's always a great start to the lesson and it gives it a less formal vibe. Then ask whether they are familiar with/have experience with XR tools for language learning. You can freely follow up explaining what XR tools are and how they can be used to enhance language learning.

Discuss the potential benefits of using XR tools, such as immersion, interactivity, and real-life context.

Warm-up Activity (10 minutes):

Conduct a short writing activity to activate prior knowledge about the topic you will be exploring with XR tools. After that, invite students to share their notes.

Encourage students to share their experiences, opinions, or vocabulary related to the topic.

XR Content Presentation (15 minutes):

Introduce the XR lesson by Mondly that you have prepared for the lesson - pick the VR simulation or AR version.

Provide clear instructions on how to use the XR devices and interact with the content.

If using VR headsets, guide students through the process of wearing and adjusting them properly.

XR Activity (20 minutes):

Divide the students into pairs or small groups, ensuring that each group has access to an XR device. Also, allow them to work on their own if they feel like it.

Assign a specific task or activity related to the target language, using the XR content as a tool.

For example, if the target language is Czech and the XR content is a virtual tour of a city, instruct students to describe the places they visit using the target language or ask them to find specific objects or landmarks and describe them.

Reflection and Discussion (10 minutes):

Regroup the students and facilitate a discussion about their experiences using XR tools for language learning.

Encourage them to share their thoughts on the effectiveness of XR in language acquisition and any challenges they face.

Discuss how XR tools can be integrated into future language lessons and explore potential applications in other subjects.

Wrap-up and Conclusion (5 minutes):

Summarize the key points discussed during the lesson.

Provide any additional resources or recommendations for students to explore XR tools further on their own.

End the lesson on a positive note, highlighting the benefits of incorporating XR tools in language learning.

Note: It is essential to ensure that students have access to appropriate XR devices and that they are properly set up and functional before the lesson begins. It may be necessary to test the XR content and devices in advance to avoid any technical issues during the lesson.

Benefits of the activity

Learning a language with XR tools can offer several benefits for students. Some key advantages are:

Immersion and Authenticity: XR tools provide an immersive experience that allows students to feel as if they are in a real-life language environment. They can explore virtual worlds, interact with realistic scenarios, and engage in conversations with virtual characters or native speakers.

Real-Life Context and Application: XR tools allow students to apply their language skills in realistic contexts. For instance, they can engage in virtual conversations, navigate virtual environments, or participate in simulated cultural activities. This application-oriented learning helps bridge the gap between classroom language instruction and real-world language use, preparing students for practical language situations.

Error Correction and Personalized Feedback: XR tools can provide immediate and personalized feedback to students, helping them identify and correct language errors in real time. This timely feedback allows for a more efficient language learning process, as students can reflect on their mistakes and make necessary adjustments while the experience is still fresh in their minds.

Enhanced Engagement and Motivation: XR tools provide an interactive and dynamic learning environment that can significantly boost student engagement and motivation. The hands-on nature of XR activities, such as interactive simulations or augmented reality games, stimulates active participation, making the language learning process more enjoyable and memorable.

Accessibility and Flexibility: XR tools can be accessed through various devices, such as VR headsets or AR-enabled smartphones, making them accessible to a wide range of learners.

Anticipatory effect of the activity

Students will become familiar with the XR technology environment and gain experience working with technology independently at home. XR tools can be a great complement to traditional school lessons, they can be used independently of the teacher, at any time, and in a fun way to practice the language for a few minutes every day.

External Resources

First, try XR tools for yourself before showing them to students. For a gamified experience with learning language through virtual reality (VR) go to https://www.mondly.com/vr and register first. For trying to learn language through augmented reality (AR) go to https://www.mondly.com/ar, download the app, and register.

5.3 LESSON PLAN 3

BASIC INFORMATION	
Duration	60 minutes
Keywords	XR, common vocabulary, everyday situations
Materials/Equipment	XR headset (such as Oculus Quest or HTC Vive), XR environment or app that supports language learning, a computer or mobile device with internet access, projector or screen for displaying instructions or examples.

Additional Notes	Before the class, ensure that the XR environment and app are set up and functioning properly. Familiarize yourself with the features and functionality of the XR environment to effectively guide students during the activity.

Lesson Plan

Aim of the activity

This activity aims to engage students in immersive language learning using XR technology. The focus is on learning everyday vocabulary and phrases through interactive and contextual experiences.

The procedure of the activity

1. Introduction (5 minutes):

Greet the students and briefly explain the concept of XR (Extended Reality) and its application in language learning. Discuss the benefits of immersive learning, such as increased engagement, contextual understanding, and real-world application of language skills. Present the learning objectives for the activity, emphasizing the acquisition of everyday vocabulary and phrases.

2. XR Environment Exploration (15 minutes):

Instruct students to put on their XR headsets and enter the XR environment. Guide students through the environment, pointing out different areas and interactive elements. Encourage students to explore the environment independently, interact with objects, and discover vocabulary and phrases embedded within the XR experience. Provide assistance and clarification as needed.

3. *Vocabulary and Phrase Identification (20 minutes):*

Divide students into pairs or small groups.

Assign specific areas or tasks within the XR environment to each group. Instruct students to actively search for and identify everyday vocabulary and phrases within the environment. Encourage collaboration and discussion within groups as they encounter new words and phrases. Monitor and provide support as necessary.

4. *Vocabulary and Phrase Consolidation (15 minutes):*

Regroup the students and facilitate a whole-class discussion. Ask each group to share their findings, vocabulary, and phrases they discovered.

Write down the identified vocabulary and phrases on the board or a shared digital platform.

Discuss the meanings, usage, and context of the identified vocabulary and phrases. Engage students in further exploration and clarification through XR examples and interactive scenarios.

5. *Wrap-up and Reflection (5 minutes):*

Summarize the key vocabulary and phrases covered during the activity. Encourage students to reflect on their experience with XR technology and its impact on their language learning. Address any questions or concerns raised by the students. Conclude the lesson by expressing the importance of incorporating immersive technologies like XR in language learning.

Benefits of the activity

The activity provides a unique and engaging learning experience by leveraging XR technology. It enhances students' language learning process by immersing them in realistic and interactive environments, allowing for contextual understanding and application of everyday vocabulary and phrases. The use of XR also fosters students' motivation, active participation, and collaboration in the language learning process.

Anticipatory effect of the activity

By engaging students in immersive XR language learning, it is expected that they will:

- Develop a broader vocabulary repertoire by encountering and exploring new words and phrases in context.
- Improve their understanding and retention of everyday vocabulary and phrases through interactive and memorable experiences.
- Enhance their ability to use language in real-world situations by applying learned vocabulary and phrases within the XR environment.
- language learning through the use of innovative technologies.

Source of the activity

This activity is designed specifically for XR language learning and is inspired by the growing field of XR educational applications. It takes inspiration from various XR language learning platforms and aims to provide a hands-on and interactive

4. LESSON PLAN 4

BASIC INFORMATION	

Duration	60 minutes
Keywords	This activity aims to introduce students to XR tools for language learning, acquaint them with the positives and limits of new technologies, and learn money-based (financial) vocabulary.

Equipment	XR devices (VR headsets, AR-enabled smartphones, or tablets), pre-prepared XR content related to the target language (pick a lesson from Mondly VR, or Mondly AR, worksheets or writing materials, projector or a screen (optional)

Lesson Plan

Aim of the activity

This lesson aims to introduce students to the learning experience through XR technologies. You can pick either Mondly VR (Virtual Reality) or Mondly AR(Augmented Reality), depending on the hardware you have access to. By the end of the lesson, students will be able to expand their vocabulary and use new words in context and they will have an XR tool to practice language on their own at home.

The procedure of the activity

1. *Introduction (5 minutes):*

Begin the lesson by asking the students how they are, what they are going through etc. It's always a great start to the lesson and it gives it a less formal vibe. Then ask whether they are familiar with/have experience with XR tools for language learning. You can freely follow up explaining what XR tools are and how they can be used to enhance language learning.

Discuss the potential benefits of using XR tools, such as immersion, interactivity, and real-life context.

2. Warm-up Activity (10 minutes):

Conduct a short writing activity to activate prior knowledge about the topic you will be exploring with XR tools. After that, invite students to share their notes. Encourage students to share their experiences, opinions, or vocabulary related to the topic.

3. XR Content Presentation (15 minutes):

Introduce the XR lesson by Mondly that you have prepared for the lesson - pick the VR simulation or AR version. Provide clear instructions on how to use the XR devices and interact with the content. If using VR headsets, guide students through the process of wearing and adjusting them properly.

4. Exploring Financial Vocabulary with XR (20 minutes):

Introduce a list of finance-related vocabulary words on the whiteboard or through a handout.
- Divide the class into small groups and distribute XR devices or smartphones with AR apps if available.
- Instruct each group to create an interactive AR experience related to travel vocabulary using the XR tools provided.

- Encourage creativity in their designs, such as associating vocabulary words with real-world images or scenarios.
- Each group will present their AR experience to the class, explaining the vocabulary used and its contextual meaning.

5. Reflection and Discussion (10 minutes):

Lead a discussion on the advantages and limitations of XR tools for language learning, based on the students' experiences during the practical activity. Summarize the key takeaways from the lesson and emphasize the importance of leveraging technology responsibly for education. Assign a short reflective writing task where students share their thoughts on the use of XR tools in language learning.

6. Wrap-up and Conclusion (5 minutes):

- Summarize the key points discussed during the lesson.
- Provide any additional resources or recommendations for students to explore XR tools further on their own.
- End the lesson on a positive note, highlighting the benefits of incorporating XR tools in language learning.

Homework (optional):

Encourage students to explore language learning apps or online platforms that incorporate XR technology. Ask them to research other fields where XR tools are being used and discuss their potential impact.

Note: It is essential to ensure that students have access to appropriate XR devices and that they are properly set up and functional before the lesson begins. It may be necessary to test the XR content and devices in advance to avoid any technical issues during the lesson.

Benefits of the activity

Learning a language with XR tools can offer several benefits for students. Here are some key advantages:

Immersion and Authenticity: XR tools provide an immersive experience that allows students to feel as if they are in a real-life language environment. They can explore virtual worlds, interact with realistic scenarios, and engage in conversations with virtual characters or native speakers.

Real-Life Context and Application: XR tools allow students to apply their language skills in realistic contexts. For instance, they can engage in virtual conversations, navigate virtual environments, or participate in simulated cultural activities.

Real-Life Context and Application: XR tools allow students to apply their language skills in realistic contexts. For instance, they can engage in virtual conversations, navigate virtual environments, or participate in simulated cultural activities. This application-oriented learning helps bridge the gap between classroom language instruction and real-world language use, preparing students for practical language situations.

Error Correction and Personalized Feedback: XR tools can provide immediate and personalized feedback to students, helping them identify and correct language errors in real time. This timely feedback allows for a more efficient language learning process, as students can reflect on their mistakes and make necessary adjustments while the experience is still fresh in their minds.

Enhanced Engagement and Motivation: XR tools provide an interactive and dynamic learning environment that can significantly boost student engagement and motivation. The hands-on nature of XR activities, such as interactive simulations or augmented reality games, stimulates active participation, making the language learning process more enjoyable and memorable.

Accessibility and Flexibility: XR tools can be accessed through various devices, such as VR headsets or AR-enabled smartphones, making them accessible to a wide range of learners.

Anticipatory effect of the activity

Students will become familiar with the XR technology environment and gain experience working with technology independently at home. XR tools can be a great complement to traditional school lessons, they can be used independently of the teacher, at any time, and in a fun way to practice the language for a few minutes every day.

External Resources

First, try XR tools for yourself before showing them to students. For a gamified experience with learning language through virtual reality (VR) go to https://www.mondly.com/vr and register first. For trying to learn language through augmented reality (AR) go to https://www.mondly.com/ar, download the app, and register.

3.5 LESSON PLAN 5

BASIC INFORMATION	
Duration	60 minutes
Keywords	English travel vocabulary, Mondly XR tool
Materials/Equipment	Learning English travel vocabulary using the Mondly XR tool. Computer or mobile device with internet access Headsets or speakers Mondly XR tool (accessible through the website or app)
Additional Notes	Before the lesson, students should have basic knowledge of the English language and vocabulary. Ensure that all students have access to a computer or mobile device with internet connectivity. Familiarize yourself with the Mondly XR tool and its features before the lesson.

Lesson Plan

Aim of the activity

To introduce and practice English travel vocabulary in an immersive and interactive virtual environment. To enhance students' language skills, including listening, speaking, and vocabulary retention. To provide an engaging and memorable learning experience using XR technology.

The procedure of the activity

1. Introduction (5 minutes):

Greet the students and briefly introduce the topic of travel vocabulary. Explain the purpose of using XR technology in the lesson to make learning more interactive and immersive. Highlight the benefits of practicing vocabulary in a virtual environment.

2. Mondly XR Tool Demonstration (10 minutes):

Instruct students to open the Mondly XR tool on their devices.

Demonstrate how to navigate and interact with the virtual environment within the Mondly XR tool. Show examples of travel-related scenarios, such as airports, hotels, or tourist attractions, available in the tool. Explain that students will explore these virtual scenarios to learn and practice travel vocabulary.

3. Vocabulary Pre-teaching (10 minutes):

Provide a list of key travel-related vocabulary words to the students.

Pronounce each word and ask the students to repeat after you to practice pronunciation. Use visuals, gestures, or real-life examples to help students understand the meaning of each word. Encourage students to take notes or create a vocabulary list for reference.

4. Interactive Virtual Scenarios (30 minutes):

Divide the students into pairs or small groups. Instruct each group to choose a virtual scenario related to travel in the Mondley XR tool. Allow students to explore the virtual environment, interact with objects, and engage in conversations using the learned vocabulary. Monitor and facilitate the groups, providing support and guidance as needed. Encourage students to use complete sentences and engage in conversations with their peers.

5. Group Sharing and Reflection (5 minutes):

Bring the students back together as a whole group. Ask each group to share their experiences and discuss any challenges they encountered during the virtual scenario. Facilitate a class discussion on the vocabulary used, the effectiveness of the XR tool for learning, and any insights gained.

The activity offers several benefits for learning English travel vocabulary using XR solutions:

Benefits of the activity

Immersive and interactive experience: Students can explore virtual scenarios that simulate real-life travel situations, allowing for a more engaging and memorable learning experience. Contextual learning: By interacting with the virtual environment, students can

practice vocabulary in meaningful contexts, enhancing their understanding and retention of the words.Language production: The activity encourages students to actively use the language by engaging in conversations, promoting speaking skills and fluency. Feedback and guidance: As the teacher, you can provide immediate feedback and guidance to students during the virtual scenarios, helping them improve their language skills in real time.

Anticipatory effect of the activity

Increase students' familiarity and confidence in using travel-related English vocabulary. Improve students' listening and speaking skills through interactive conversations in virtual scenarios. Enhance students' ability to understand and use vocabulary in context. Motivate students by providing an innovative and engaging learning experience.

Source of the activity

This activity is designed specifically for using the Mondly XR tool to teach English travel vocabulary.

External resources for the activity

English travel vocabulary word list

Visual aids or props to support vocabulary pre-teaching Optional: Whiteboard or flipchart for note-taking during the group sharing and reflection phase.

6. Source Material:

1. Alalwan, N.; Cheng, L.; Al-Samarraie, H.; Yousef, R.; Alzahrani, A.I.; Sarsam, S. Challenges and prospects of virtual reality and augmented reality utilization among primary school teachers: A developing country perspective. Stud. Educ. Eval. 2020,66, 100876.

2. Alqahtani, A.S.; Daghestani, L.F.; Ibrahim, L.F. Environments and system types of virtual reality technology in STEM: A survey. Int. J. Adv. Comput. Sci. Appl. IJACSA 2017, 8, 77–89.

3. Antzoulatos, G. *et al.* (2022). Usage of Visual Analytics to Support Immigration-Related, Personalised Language Training Scenarios. In: Auer, M.E., Tsiatsos, T. (eds) New Realities, Mobile Systems and Applications. IMCL 2021. *Lecture Notes in Networks and Systems*, vol 411. Springer, Cham.

4. Azuma, R. (1997). A survey of augmented reality. *Presence: Teleoperators & Virtual Environment, 6*(4), 355–385.

5. Bucea-Manea-Țoniş, R., Bucea-Manea-Țoniş, R., Simion, V. E., Ilic, D., Braicu, C., & Manea, N. (2020). Sustainability in higher education: The relationship between work-life balance and XR e-learning facilities. *Sustainability*, *12*(14), 5872.

6. Christoforou, M., Xerou, E., & Papadima-Sophocleous, S. (2019). Integrating a virtual reality application to simulate situated learning experiences in a foreign language course. *CALL and complexity–short papers from EUROCALL*, 82-87.

7. Danai Rapti, Demetris Gerogiannis & Spyridon-Georgios Soulis (2022): The effectiveness of augmented reality for English vocabulary instruction of Greek students with intellectual disability, *European Journal of Special Needs Education*, DOI: 10.1080/08856257.2022.2045816

8. Danyang Shang, Minjuan Wang, and Junjie Gavin Wu. (2020) Design and Implementation of Augmented Reality for English Language Education; in Augmented Reality in Education; Edition: 1st Publisher: Springer International Publishing

9. Eugenijus Kurilovas (2016) Evaluation of quality and personalization of VR/AR/MR learning systems, Behaviour & Information Technology, 35:11, 998-1007, DOI: 10.1080/0144929X.2016.1212929

10. Godwin-Jones, R. (2016). Augmented reality and language learning: From annotated vocabulary to place-based mobile games. *Language Learning and Technology, 20*(3), 9–19. DOI: 10125/44475

11. Kaplan-Rakowski, R., Papin, K., & Hartwick, P. (2023). Language teachers' perceptions and use of extended reality. *CALICO Journal*

12. Karageorgakis, T., & Nisiforou, E. A. (2018). Virtual reality in the EFL classroom: Educational affordances and students' perceptions in Cyprus. *Cyprus Review*, *30*(1), 381-396.

13. Kornijchuk Andriej (2016) „Nauka Języka w Integracji Uchodźców". Instytut Spraw Publicznych.

14. Korosidou, E., Bratitsis, T. (2021). Gamifying Early Foreign Language Learning. In: Auer, M.E., Tsiatsos, T. (eds) Internet of Things, Infrastructures and Mobile Applications. IMCL 2019. *Advances in Intelligent Systems and Computing*, vol 1192. Springer, Cham.

15. Kosmas, P., Makridou, E., Pirkkalainen, H., Torro, O., & Vrasidas, C. (2021, November). Opportunities, challenges, and training needs in the use of VR in Higher Education and SMEs: The case of Cyprus and Finland. In *CHI Greece 2021: 1st International Conference of the ACM Greek SIGCHI Chapter* (pp. 1-7).

16. Kowalczyk, O. Zamorska A. (2022) Społeczno-Ekonomiczne Funkcjonowanie Kobiet Zagrożonych Wykluczeniem Społecznym a Trakcie Pandemii COVID-19. Atheneum vol. 74(2)/2022, ss. 151–165

17. Lasica, I. E., Meletiou-Mavrotheris, M., & Katzis, K. (2020). Augmented reality in lower secondary education: A teacher professional development program in Cyprus and Greece. *Education Sciences*, *10*(4), 121.

18. Liu, W., Cheok, A. D., Mei-Ling, C. L., & Theng, Y. L. (2007, September). Mixed reality classroom: learning from entertainment. In *Proceedings of the 2nd International Conference on Digital Interactive Media in Entertainment and Arts* (pp. 65-72).

19. Meccawy, M. Creating an Immersive XR Learning Experience: A Roadmap for Educators. Electronics 2022, 11, 3547. https://doi.org/ 10.3390/electronics11213547

20. Nisiotis, L., & Alboul, L. (2021, May). Work-in-progress Intelligent Immersive Learning System Using AI, XR, and Robots. In *2021 7th International Conference of the Immersive Learning Research Network (iLRN)* (pp. 1-3). IEEE.

21. Obeidat, H.; Meccawy, M.; Blanchfield, P. Authoring for Adaptive Web-Based Learning Systems: A Case Study; International Journal of Emerging Technology in Learning: Kassel, Germany, 2009.

22. Palaigeorgiou, G., Politou, F., Tsirika, F., & Kotabasis, G. (2017, October). FingerDetectives: Affordable augmented interactive miniatures for embodied vocabulary acquisition in second language learning. In *European Conference on Games Based Learning* (pp. 523-530). Academic Conferences International Limited.

23. V. Plutzar, M. Ritter (2008), Language Learning in the Context of Migration and Integration --- Challenges and Options for Adult Learners.

24. Rosell-Aguilar F (2017) State of the app: a taxonomy and framework for evaluating language learning mobile applications. CALICO Journal 34(2):243–258

25. Rospigliosi, P. A. (2022). Metaverse or Simulacra? Roblox, Minecraft, Meta, and the turn to virtual reality for education, socialization, and work. *Interactive Learning Environments*, *30*(1), 1–3.

26. Smutny, P. Learning with virtual reality: A market analysis of educational and training applications. Interact. Learn. Environ. 2022,1–14.

27. Tolias, D., Exadaktylos, G. (2007). Learning Through Exploration, Autonomy, Collaboration, and Simulation: The 'all-in-one' Virtual School of the Hellas Alive!© Online, Language-Learning Platform. In: Stephanidis, C. (eds) Universal Access in Human-Computer Interaction. Applications and Services. UAHCI 2007. *Lecture Notes in Computer* Science, vol 4556. Springer, Berlin, Heidelberg.

28. Velev, D.; Zlateva, P. Virtual reality challenges in education and training. Int. J. Learn. Teach. 2017, 3, 33–37.

29. Yuen, S. C. Y., Yaoyuneyong, G., & Johnson, E. (2011). Augmented reality: An overview and five directions for AR in education. *Journal of Educational Technology Development and Exchange (JETDE)*, *4*(1), 11.

30. https://is.muni.cz/th/yiubd/Michal_Hanzl_481198_Bakalarska_prace.pdf?kod=bk2063;lang=en

31. http://digilib.k.utb.cz/bitstream/handle/10563/46462/kubov%C3%A1_2021_dp.pdf?sequence=-1&isAllowed=y

32.https://www.czso.cz/documents/11292/27320905/c01R02_202212.pdf/964f22b0-7903-4521-91ec-9cb4182f6173?version=1.0

33. https://www.muzesmluvitcesky.cz/projects-2

34. https://www.xrguru.com/blog/2022/01/virtual-reality-is-the-next-step-in-language-learning

35. https://www.fluentu.com/blog/english/virtual-reality-english-learning/

36.https://strefaedukacji.pl/edukacja-w-polsce-wymaga-zmian-ekspert-proponuje-rozwiazania-sama-zdawalnosc-to-za-malo-nie-kazdy-uczen-musi-miec-wyzsze/ar/c5-16953779

37. https://123way.pl/vr-ar-nowoczesne-metody-nauczania-jezykow-obcych/

38. https://giantlazer.com/pl/lekcje-jezykow-obcych-w-vr/

39. http://www.mpips.gov.pl/bip/projekty-aktow-prawnych/projekty-programow-iinne/olskapolitykaintegracjicudzoziemcw-zaoeniaiwy tyczne