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VRTEACHER

Virtual Reality-based Training to
improvE digitAl Competences of
teacherS

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IMPACT ASSESSMENT REPORT



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1. Executive Summary

The VRTEACHER project aims to provide effective education responses related to educators' training using a novel VR-based pedagogical approach for virtual practice. The project aims to address the need for modernization and digital transformation of teacher education and training, reinforcing educators' digital skills and readiness through a Virtual Reality (VR) training method and tool. The core target group of the project are pre-service student teachers (higher education students, PhD candidates, etc.) and in-service educators/teachers.

To this point, the VRTEACHER project had the following aims:

- Address the challenges related to class management in crisis situations.
- Equip teachers with key skills (e.g., empathy, perspective-taking, self-efficacy, adaptability, etc.) through immersive and experiential training experiences that reflect real-life scenarios and situations faced during a crisis.

The purpose of this Impact Assessment Report is to showcase the advancements and accomplishments made by the VRTEACHER consortium in utilizing VR as a tool for educators and teachers to enhance their skills and competences and achieve tangible change and reach. The project's evaluation framework aimed to assist all partners in assessing the effectiveness and impact of the training activities and the implementation of the VR tool. It sought to identify appropriate evaluation methods, tools (supported by CUT and U3CM), and indicators to investigate and determine the impact of the VR tool on the personal and professional growth of both in-service and pre-service teachers involved in the implementation phase.

Each project partner was responsible for ensuring that the implementation, dissemination, and impact assessment strategies of the VRTEACHER project were carried out locally among target group members, within their professional networks, and in collaboration with local, regional, and national providers and policymakers.



2. Introduction to the VRTEACHER Impact Assessment Process

The VRTEACHER project has adopted the IMPACT+ Framework as its strategy to assist the project consortium in measuring and monitoring the impact of their project activities at the local, regional, and national levels with pre-service and in-service teachers.

By adhering to this framework, the partners of the VRTEACHER project have reached a consensus on a set of indicators, put forth by Future in Perspective, the impact leader, which specifically target the anticipated impact of each intellectual output within their respective national contexts. These indicators allow for the evaluation of impacts at various levels, including:

- **Systemic:** focuses on the intellectual output impact in relation to the sector, subject area of the project, peer or beneficiary networks, policy, or legislative change, etc.
- **Organizations:** focuses on the impact of the intellectual output in relation to the operation of service/training offered by project partner organizations.
- **Learners:** focuses on the impact of the intellectual output in relation to individual learners or staff (tutors, educators, trainers, etc.) who will be engaged in the learning, teaching, and training activities foreseen in the project application; and,
- **Project Staff:** focuses on the impact of the intellectual output in relation to the project staff managing and coordinating the project in each partner organization.

IMPACT+ is meant to act as a starting point to assess the level of impact that an intellectual output can be achieved on each of these levels, supported by additional evaluation tools and methods. In following this structure, the VRTEACHER consortium specifically focused on the impact of the VR tool on learners, who in the context of the VRTEACHER project are pre-service and in-service teachers.

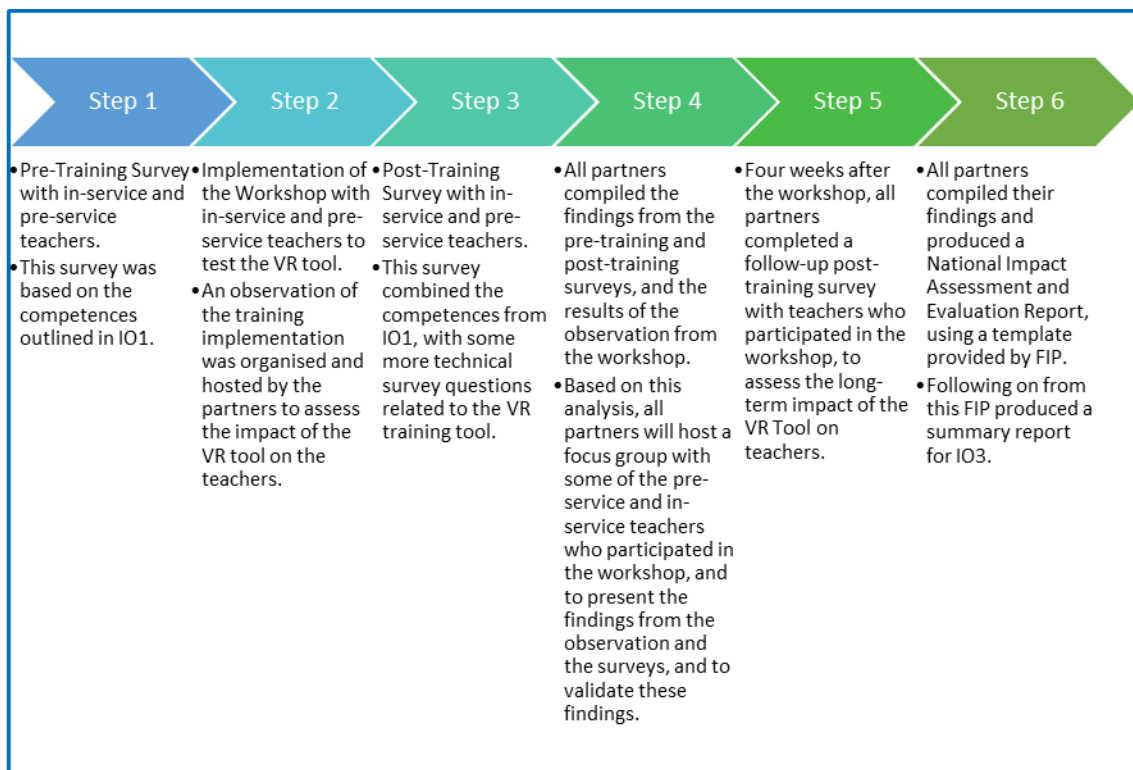
Partners completed IMPACT+ exercises to estimate the intended impact, to propose impact indicators and data sources to be used to measure their progress towards achieving this impact and to estimate the timescale for realizing this impact (short, medium, or long-term) for each mentioned impact. Following on from these IMPACT+ exercises, Future in Perspective, distilled the findings from the IMPACT+ exercises to develop a set of specific impact indicators for each IO. These indicators then became the basis for the Impact Assessment and results presented in the current report.



3. Overview of Impact Assessment Methodology

Each partner completed the implementation of the VR Tool developed by the VRTEACHER project with in-service and pre-service teachers in each country. The implementation phase included delivering face-to-face workshops with these teachers to test the VR training tool, and to assess the impact that this tool had on their teaching skills, their digital skills, and their attitudes towards their students.

Within the framework of this IO, partners were free to design their national implementation process, based on their access to the target groups and their local context. While partners were free to choose how they deliver the implementation and impact assessment, they were required to complete the following steps in sequence:



4. Impact Assessment Process in Europe

Once the piloting had been completed in each partner country, each partner was required to assess the impact of the piloting and the VR tool with participants using the IMPACT+ methodology. The impact process was assessed by each partner following the implementation of training with the target group.

Cyprus

The training took place from December 2022 to January 2023 in Cyprus at three different municipalities (Nicosia, Limassol and Larnaca) and followed a structured approach to ensure effective learning outcomes. The training program began with an online workshop designed to introduce the participants to the concept of VR and its potential applications in education. The workshop provided an overview of the VRTEACHER project and its objectives, highlighting the benefits of using VR in teacher training. After the initial online workshop, the participants engaged in face-to-face (F2F) meetings organized in small groups. During these meetings, they had hands-on experience with the VR application developed specifically for the project. The VR tool allowed the teachers to immerse themselves in realistic educational scenarios and practice various teaching techniques within the virtual environment. Following the F2F sessions, the participants reconvened for another online workshop after four weeks. This workshop served as a platform for the teachers to reflect on their experiences using the VR tool. They shared their insights, discussed challenges faced, and exchanged ideas on how to effectively integrate VR into their teaching practices.

Greece

The training programme was implemented successfully, as it was based on the main findings concerning the potential of VR in Education, benchmarked with principles of effective management of activities along with innovation in education. This helped the activities to be carried out as expected and achieve the best possible educational outcome for the teachers.

A significant finding was that the teachers were generally positive towards VR applications, becoming familiar with them, and applying them in their work. They agreed that VR has strong potential to enhance their work performance and the learning



outcomes for the students, as well as the working conditions at school. They expressed that the three scenarios reflected issues that educators face, in a holistic aspect. They added that the experience of the training programme can help them deal with these issues in ways that they would not have considered if they had approached them with other training practices. This justifies that VR can have a significant impact on teacher training and bring in other benefits as well.

Another finding is that VR equipment is accessible. The headsets with smartphones were easy to be obtained and used by the teachers, with ease. They all managed to learn how to use them and install the appropriate software in a rather short, limited period. They managed to see all the scenarios and carry out all activities without facing challenges. No major technical problems or difficulties were observed. This justifies that using VR in teacher training is also feasible and should not be considered a monopoly for experts.

Lastly, all teachers expressed satisfaction with the quality of activities and agreed that there was no ethical, legal or moral topic that could cause disturbance or lead any participant to feel uncomfortable. Although the scenarios touched, in some cases, sensitive topics, such as abuse and inappropriate behaviour in school or family contexts, participants agreed that it was planned carefully and appropriately. This, of course, was due to detailed preparation. It justifies though that this planning is possible and can have many advantages in the use of VR for appropriate purposes.

In short, the training programme proved that the use of VR in teacher training can attract teachers' interests and provide them with the necessary qualities. It is easy to apply by them and, if planned prudently, the training can avoid topics of disrespect or similar reactions. Therefore, VR has strong advantages when used in teacher training.

Ireland

The piloting phase of the VRTEACHER project in Ireland reached a total of 31 participants across four piloting groups. The piloting phase, which took place between December 2022 to February 2023, involved nearly all female participants, with only two male participants in the final group. Most participants were primary or secondary school in-service teachers. There were minimal technical issues in downloading, installing, and using the app using both the participants' and the trainers' Android phones.

The core objectives of the piloting were to provide educators with the opportunity to test the VR app as well as learn the benefits of using VR as a teaching tool in classrooms and



educational settings. The aim of the app was to build key skills and competences in teachers by giving them set scenarios using the VR application. The participants expressed great interest in using the app to build their own skills, as well as noting the importance of using technology in the classroom and beyond.

Malta

IO3 of the VRTEACHER Project was implemented in Malta between December 2022 and February 2023, from the issuing of the call for participation to the post-training online workshop. There were 59 eligible participants from 63 registrations, with 43 completing the face-to-face training. Most of the participants were in-service female educators from Maltese primary and secondary schools (compulsory education). The face-to-face training was conducted over three sessions for logistical reasons. While only a small percentage of participants had previous experience with VR, the overall reaction was quite positive. There were minimal technical issues in downloading, installing, and experiencing the scenarios.

The objectives of the app to promote empathy and understanding have been reached. The participant educators said VR is an effective tool in education and they appreciate that as a new tool that needs a pedagogical foundation for implementation. They suggested new scenarios and expressed willingness to use the VR application in class. However, schools need to update their policies on using smartphones in class.

Spain

The piloting phase of the VRTEACHER project in Spain engaged a total of 71 participants from January to February 2023. The training activities were held on the campuses of two universities in the Madrid area:

- The Cantoblanco Campus of the Universidad Autonoma de Madrid (UAM)
- The Leganés Campus of the Universidad Carlos III de Madrid (UC3M)

The organisation of the workshops aimed at collecting feedback from both current and prospective teachers. Following this aim the workshops at the Universidad Autonoma de Madrid were designed for university students in the education field, while activities at the Universidad Carlos III de Madrid targeted experienced university teachers.

In general, participants recognized VR as a valuable tool that allows them to experience different situations in 3D scenarios alongside reality, making it a genuinely useful activity.



Additionally, the usefulness of the pilot was highlighted as an initiation to later use this type of resource in the classroom and to approach different circumstances with technology in an alternative way. However, some participants noted that schools and teaching teams lacked resources, both in terms of materials and training, to effectively carry out this type of experience.



5. Piloting the Impact Assessment Process in Europe

Cyprus

RECRUITMENT AND SELECTION OF PARTICIPANTS

CUT co-organized the training activities in Cyprus with the Cyprus Pedagogical Institute (CPI), which is officially an Associated Partner of the project. CPI initiated an open call for teachers to participate in the VRTEACHER training program through its website. The open call was released on the 15th of November 2022. CPI used its own registration system and invited interested teachers to apply for a position in the training programme. CUT also released through all official channels the open call targeting higher education students and academics. CUT created an application form in Google format only for the training activities concerning the municipality of Limassol that can be found here: <https://forms.gle/7pMjbAqdYuWgUeGn8>.

Given the limited number of available slots, careful consideration was given to the application process. Teachers were provided with the opportunity to submit their applications, expressing their interest in participating and indicating their preferred municipality and desired timeframe for the face-to-face training sessions. Once the application period concluded, CPI provided CUT with the lists of applicants. CUT proceeded to evaluate them based on a predetermined priority order. Factors such as the preferences declared by the applicants regarding municipality and training time were taken into account during the selection process.

After careful consideration, CUT and CPI decided to accept all applications received for the VRTEACHER training program. This decision was influenced by CPI's commitment to supporting the training activities by providing VR headsets and smartphones from its own resources. This additional equipment, combined with the existing equipment available at CUT, enabled the training of a larger number of participants in each group. By expanding the capacity of the training sessions, it was possible to accommodate all participants who expressed their interest in the program. This collaborative effort between CUT and CPI reflects their commitment to promoting professional development opportunities for educators and their belief in the transformative power of VR in teacher training.

A total of **142** in-service teachers submitted their applications through CPI's dedicated registration platform. All applicants were accepted into the VRTEACHER training program.

PROFILE OF PARTICIPANTS

The participants were categorized into six groups based on their preferred municipality and selected time slot, allowing for efficient organization and coordination of the training



sessions. This division ensured that each group consisted of teachers from the same municipality and shared a common availability for face-to-face training activities. By grouping participants in this manner, the VRTEACHER project aimed to facilitate effective communication, collaboration, and a sense of community among teachers from the same geographic area. This approach fostered opportunities for local networking, sharing of experiences, and potential collaboration on future educational initiatives. Table 1 presents the 6 groups of participants.

Table 1. The six groups of participants

Group	Municipality	Time Slot
<i>Group 1</i>	Nicosia	16.00-18.00
<i>Group 2</i>	Nicosia	18.00-20.00
<i>Group 3</i>	Limassol	16.00-18.00
<i>Group 4</i>	Limassol	18.00-20.00
<i>Group 5</i>	Larnaca	16.00-18.00
<i>Group 6</i>	Larnaca	18.00-20.00
<i>Group 7</i>	Limassol	16.00-18.00

An email notification was sent to each group, informing them about their successful acceptance into the programme. The email also provided detailed information regarding the training activities, including the schedule and program outline per group.

Despite the open call from CUT and efforts to attract a diverse pool of participants, the number of applications received from academics and pre-service students was relatively low, with only 5 individuals expressing interest in the VRTEACHER training program. One possible explanation for the limited response could be the timing of the application period, which coincided with the exam period for universities. The first days of December typically mark a crucial period for students as they prepare for and undergo their final exams. This demanding academic schedule likely deterred many academics and pre-service students from applying for the training program, as their primary focus during this time is on their studies and completing their examinations.

Based on the proposal each partner country had to train 30 in-service and pre-service teachers. However, the consortium's decided to aim for the training of 50 in-service and pre-service teachers in each partner country demonstrating a commitment to providing valuable learning opportunities to a significant number of teachers. By accommodating more teachers, the project was able to impact a larger group of individuals, potentially leading to a wider dissemination of knowledge and skills in virtual reality-based teaching.

In Cyprus, 148 applications have been accepted and in total **110** individuals were trained with the VR application. On a positive note, accepting a higher number of applications than initially planned allowed for a broader reach and increased participation in the training program. The vast majority of participants, a total of 105 individuals were in-service teachers coming from primary (N=60), secondary (N=25) and VET level (N=12), 3 were from the Ministry of Education, Sports and Youth, 1 from Pedagogical Institute of Cyprus 3 were academics and 2 were higher education students from the Department of Fine and Applied Arts.

Table 2. Total number of participants trained with the VRTEACHER application

Group	Municipality	Time Slot	Total Number	Profile of participants
<i>Group 1</i>	Nicosia	16.00-18.00	28	In-service teachers <ul style="list-style-type: none"> • 16 Primary education • 1 Kindergarten • 8 Secondary education • 3 VET
<i>Group 2</i>	Nicosia	18.00-20.00	22	In-service teachers <ul style="list-style-type: none"> • 9 Primary education • 7 Secondary education • 2 VET • 3 Ministry of Education, Sports and Youth • 1 Pedagogical Institute of Cyprus
<i>Group 3</i>	Limassol	16.00-18.00	18	In-service teachers <ul style="list-style-type: none"> • 9 Primary education • 3 Secondary education • 6 VET
<i>Group 4</i>	Limassol	18.00-20.00	14	In-service teachers <ul style="list-style-type: none"> • 8 Primary education • 5 Secondary education • 1 VET
<i>Group 5</i>	Larnaca	16.00-18.00	14	In-service teachers <ul style="list-style-type: none"> • 11 Primary education • 3 Secondary education
<i>Group 6</i>	Larnaca	18.00-20.00	9	In-service teachers <ul style="list-style-type: none"> • 7 Primary education • 2 Secondary education
<i>Group 7</i>	Limassol	16.00-18.00	5	<ul style="list-style-type: none"> • 3 Academics

- 2 higher education students

METHODOLOGY AND IMPLEMENTATION ACTIVITIES

The implementation activities of the VRTEACHER project followed a structured approach to ensure an effective and comprehensive training experience for the participants. The activities were designed to provide a balanced combination of online and face-to-face interactions, allowing for both theoretical knowledge acquisition and practical use of the VR application.

The implementation activities followed the following structure:

- ***Introductory online workshop.*** The implementation began with an introductory online workshop, which served as a foundational session to familiarize the participants with the concepts, principles, and potential use of virtual reality in education. This workshop aimed to provide a common understanding and establish a baseline of knowledge for all participants. It was a crucial starting point to ensure that everyone had a solid foundation before moving on to the subsequent stages of the training. During this introductory workshop, the participants were also asked to register on the VRTEACHER platform through the official website of the project to be able to download the VR application and resources of the project. The introductory online workshop of the VRTEACHER project was facilitated by Dr. Christos Roushias from CPI, who played a pivotal role in coordinating and guiding the participants throughout the workshop. Dr. Roushias, with his expertise in the field, provided valuable insights and instructions to ensure a productive and engaging session. Participants were required to connect to the workshop using their professional accounts associated with CPI. Dr. Roushias provided the necessary Zoom link, which served as the virtual meeting space for the participants to join. The introductory online workshop of the VRTEACHER project witnessed the participation of **130** individuals.
- ***Face-to-face training in groups.*** Following the online workshop, the participants engaged in face-to-face training sessions conducted in groups. These sessions provided hands-on experiences with the virtual reality tool, allowing participants to explore its functionalities, experiment with the different scenarios, and gain practical skills related to classroom management. The face-to-face trainings of the VRTEACHER project were organized into seven groups, as outlined in Table 2. The trainings were



conducted in three municipalities, namely Nicosia, Limassol, and Larnaka, providing accessibility and convenience for the participants from different regions. A total of **110** participants had the opportunity to undergo training using the VR application. It should also be noted that CPI supported the training activities by providing VR headsets and smartphones from its own resources. This additional equipment, combined with the existing equipment available at CUT, enabled the training of a larger number of participants in each group. Also, Dr. Christos Roushias from CPI was present at all face-to-face trainings providing significant support. During the face-to-face trainings the participants had to complete one questionnaire before the VR implementation and one after the VR implementation. Both questionnaires are available in the document “**IO3 – Evaluation Framework and Impact Assessment Tools**”.

- **Final online workshop.** This final workshop served as a wrap-up and reinforcement of the key concepts covered throughout the training. It provided an opportunity for participants to reflect on their experiences, share their insights, and engage in further discussions related to virtual reality in education. The participants provided significant insights and suggestions about improvements to the VR application. During the final online workshop, which took place on Thursday, January 12, 2023, a total of **90** participants actively participated. Following the conclusion of the workshop, a follow-up questionnaire was distributed to all participants. This questionnaire aimed to evaluate the long-term impact of VR-based training by gathering feedback and assessing the sustained benefits of the program. The follow-up questionnaire is available in the document “**IO3 – Evaluation Framework and Impact Assessment Tools**”. Dr. Roushias from CPI provided the necessary Zoom link, which served as the virtual meeting space for the participants to join.

Table 3 provides all the information about the implementation activities.

Table 3. Implementation activities in Cyprus

Date and time	Location	Description
Friday 18 November 2022	https://www.pi-eggrafes.ac.cy	Last date for submission of the registration form
Friday 25 November 2022	Email	Notification of selected applicants
1 December 2022 16.30-18.00	Online	Introductory online workshop
Monday 5-9 December 2022	F2F meetings	Face-to-face educational activities using VR



12 January 2023
16.30-18.00

<ul style="list-style-type: none">• Nicosia, 2 groups, 16.00-18.00 and 18.00-20.00• Limassol, 2 groups, 16.00-18.00 and 18.00-20.00• Larnaca, 2 groups, 16.00-18.00 and 18.00-20.00	
Online	Final online workshop

Greece

RECRUITMENT AND SELECTION OF PARTICIPANTS

Recruitment Process in Rhodes, Greece

Invitations, posters and announcements were sent for teachers and students to participate. This was done with the help of social media and announcements, or emails sent from education authorities to schools. Whenever it was possible, there was a brief oral presentation of the training programme, its' goals and structure. This was done to further attract participants.

Recruitment Process in Rafina, Greece

The Directorate of Secondary Education of Eastern Attica supported the recruitment of teachers from its area of responsibility.

Application Form

The link to the application form is: <https://bit.ly/VRTEACHER-Form>.

Selection of Participants

Participants were notified in accordance with the timetable communicated to them in the invitation to participate.

Total number of accepted applications: 71

Total number of University students: 7

Total number of in-service teachers: 64

PROFILE OF PARTICIPANTS

Most participants were in-service training teachers. There was a small number of trainee teachers too. Their specialization was different, since there were elementary school



teachers, nursery school teachers, English teachers, ICT teachers, Mathematics Teachers, Science Teachers, Special Education Teachers or Vocational Education teachers among them. There was a large age range since there were teachers in their 20s and teachers in their 50s too. As there were two different training centres, one in Attica and one in Rhodes, this helped gather teachers from various areas of the country, including Athens, Rhodes, smaller islands and mainland Greece. It can be stated that the sample of participants was representative of the Greek teacher population.

METHODOLOGY AND IMPLEMENTATION ACTIVITIES

Date and time	Location	Description
<i>Friday 2 December 2022</i>	Google Form	Application form opened
<i>Friday 30 December 2022</i>	Google Form	Deadline for application
<i>Friday 13 January 2023 17:30-19:00</i>	UAegean zoom Video Conferencing	Phase A: Introductory online workshop
<i>Saturday 21 January 2023</i>	Face-to-Face Training 3 rd Laboratory Center of East Attica, Rafina Rodion Pedia, Rhodes	Phase B: Face-to-Face Training in VRTEACHER scenarios using Virtual Reality
<i>Friday 10 February 2023 17:30-19:00</i>	UAegean zoom Video Conferencing	Phase C: Final online workshop Reflection and evaluation of the project

The implementation activities had to follow the following structure:

- Phase A: Introductory online workshop. During this introductory meeting, there was a detailed presentation of the project, Virtual Reality generally and its' use in education. Registration in the platform was done as well.
- Phase B: Face-to-face Training in the VRTEACHER Scenarios with the use of VR. This phase began with filling out a pre-training questionnaire, regarding the topics of the scenarios. Afterwards, the participants engaged in Virtual World and attended the three scenarios. For practical reasons, they were divided into groups. In the end, a post-training questionnaire was filled in.
- Phase C: Online Work Review and Evaluation. This phase included review, discussion and discourse regarding the project and the use of VR in teacher training. A questionnaire regarding the impact of the work was filled in.

Number of Participants

During Phase A, a total number of 43 participants attended the online workshop. During the face-to-face training, there were 43 participants, 30 in Rafina, Attica and another 13 in Rhodes. Finally, 48 participants attended the final workshop.



Group division

Having in mind, the number of participants, the available time, space and equipment, the registered participants were divided into groups, to ensure that all activities will be implemented properly and the trainees will engage in the scenarios, comfortably. The time allocated for each group was two hours, including introduction, filling in the pre-training questionnaires, engaging with the scenarios, filling in the post-training questionnaires and closure.

In Rafina 3 groups were formed. Groups A and B included 15 participants, whereas Group C included 14. In Rhodes, two groups were formed. The first included 15 participants, whereas the second included 12.

Invited Speakers

Dr. Kalliopi Evangelia Stavroulia, the Principal Investigator of the project, was invited to the online trainings. As an expert in Virtual Reality, in charge of the project, she managed to present interesting information, regarding the project and Virtual Reality, generally. Her contribution helped the trainees and enhanced their interest further.

5.1. VR equipment used

For the online learning activities, the University of the Aegean used the zoom platform (<https://aegean-gr.zoom.us/>). Participants had been notified of the links and registration was required for the system to generate the report of participants.

For the face-to-face meetings, there was a variety of equipment. VR Headsets—of type VRClever, 8 VR ESPERANZA 3D VR- glasses EGV300R—were used that required smartphone. The devices were particularly easy to use even for users who were using VR Headsets for the first time. Apart from this, for the purpose of the session, there was an interactive whiteboard where an introductory presentation was shown, about Virtual Reality, its potential in education and the program. Finally, computers and computer labs were used to complete questionnaires.

5.2. Data collection

As planned, before the scenario activities, all participants had to complete a questionnaire, which was located at the following link:

https://es.surveymonkey.com/r/VRTEACHERS_PRETRAINING?lang=el



After the activities with the VR Tool, they completed the post-test questionnaire, which can be found at the following link:

https://es.surveymonkey.com/r/VRTEACHERS_POST?lang=el

After the completion of the training programme participants completed the follow-up evaluation and feedback questionnaire at the following link:

<https://es.surveymonkey.com/r/Follow-up-VR?lang=el>

Data from the questionnaires were then collected and analysed by CUT and FIP.

Ireland

RECRUITMENT AND SELECTION OF PARTICIPANTS

The training programme event was organized by Future in Perspective Limited in collaboration with several schools throughout Cavan and Dublin. These schools are:

- St Mary National School
- Loreto College Cavan
- St. Ellenfield Community College

Through telephone and email communication with schools, Future in Perspective agreed to organize the training programme agenda, timeframe, and venues. Schools advertised the training programme to teachers during their staff meetings and recruited participants.

PROFILE OF PARTICIPANTS

In total, we had over 30 participants. Almost all participants were in-service school teachers. The participants were a mixture of primary school educators, secondary school educators, and Special Needs Assistants (SNAs). They were from varying backgrounds and age. These participants had engaged with the project previously and were very interested in the VRTEACHER project.

Most participants were female with only 2 male participants taking part in the training in Group 4.

METHODOLOGY AND IMPLEMENTATION ACTIVITIES

The VRTEACHER implementation methodology was delivered into four workshops (4 groups) as it was difficult to accommodate all teachers into one workshop. Hence, the training programme was delivered four times. (See below workshops timeframe). The main aim of these workshop events is to present face-to-face educational activities using

VR and to evaluate the effectiveness and impact of the training activities and the implementation of the VR tool.

F2F Workshops timeframe

Date and time	Location	Description
Group 1	St Mary National School – Virginia, Co. Cavan	F2F workshop
Group 2	Loreto College Cavan – CCLD training Room, Cavan	F2F workshop
Group 3	St Marys National School – ETB training Room12 A, Cavan	F2F workshop
Group 4	St. Ellenfield Community College – CCLD training Room, Cavan	F2F workshop

List of participants number for each group

- Group 1: 7 participants
- Group 2: 7 participants
- Group 3: 8 participants
- Group 4: 9 participants

Equipment Used

Future in Perspective purchased 10 VR headsets which were all used during the implementation process. The VR headsets were manufactured by DESTEK (Model V5 VR Headset). These VR headsets were used by inserting an Android mobile device into the headset and booting up the application to access the training programme.

Data collection

The questionnaires for participants were completed in English and were used for data collection purposes. All pre-post-follow-up questionnaires were issued to participants and links to survey monkeys were sent to them and participants were given the option to complete the survey.

- PRE-Training Survey: https://es.surveymonkey.com/r/VRTEACHERs_PreTraining
- POST-Training Survey: https://es.surveymonkey.com/r/VRTEACHERs_Post
- FOLLOW-UP Training Survey: <https://es.surveymonkey.com/r/Follow-up-VR>

Malta

RECRUITMENT AND SELECTION OF PARTICIPANTS

The recruitment process started with an open call addressed to all pre-service teachers, in-service teachers, and higher-education educators in the Maltese Islands. Relevant institutions like the Malta Union of Teachers, the Secretariat for Catholic Education, the Institute of Tourism Studies and the Faculty of Education University of Malta were approached, and they agreed to disseminate the call with their members/students. The call opened on the 8th of December 2022 and remained open until the 13th of January 2023. However, 3CL was approached and accepted very late registrations until the 19th of January 2023.

The application form was available online at: <https://bit.ly/3WvtMyn>.

There were 62 registrations, of which 59 eligible participants were accepted and invited to do the training. To be accepted for participation, the applicants must be working in Malta and currently employed as an educator. Of those accepted to participate, four were pre-service teachers, four were educators in post-secondary or higher education, 16 were service educators in primary schools and 35 were service educators in secondary schools.

PROFILE OF PARTICIPANTS

Out of the 59 registered participants, 43 attended the face-to-face training held in three separate venues. Only 1 out of 4 of the pre-service teachers attended this training.

In terms of the gender of the registered participants, 88% were female and 12% were male. Other genders were not represented in the registrations.

Only 7 of the participants or 12% had previous experience in using Virtual Reality with a head-mounted display (headset).

METHODOLOGY AND IMPLEMENTATION ACTIVITIES

Date and time	Location	Description
Friday 8 December 2022 – Friday 13 January 2023	Social Media, e-mails, URL	Call for applications is open
Sunday 8 January 2022 – Friday 13 January 2023	Email	Notification of selected participants
Friday 13 January 2023 16.30-18.00 hrs	Online video conference	Introductory online workshop



1. Wednesday 18 January 08.30-10.30 2. Friday 27 January 09.00-17.00 3. Monday 30 January 11.00-13.00	1. St Martin's College (Msida) 2. Directorate for Digital Literacy and Transversal Skills (Ħamrun) 3. Institute of Tourism Studies (Luqa)	Face-to-face educational activities using VR in separate groups
Wednesday 1 February 2023 16.00-17.00	Online video conference	Final online workshop

Participation rate:

Date	Event	No. of participants	Remarks
Friday 13 January 2023 16.00-17.00	Introductory online workshop	15	The number of participants in the online workshop is greater as a recording of the sessions was made available to those who could not attend on the day.
Wednesday 18 January 2023 08.30-10.30	F2F training at St Martin's College (Msida)	26	For educators in secondary schools.
Friday 27 January 09.00-17.00	F2F at the Directorate for Digital Literacy and Transversal Skills (Ħamrun)	16	For educators in primary schools and those who could not attend on the 18 January.
Monday 30 January 2023 11.00-13.00	F2F training at the Institute of Tourism Studies (Luqa)	4	For service educators at the Institute of Tourism Studies and those who could not attend on the 27 January.
Wednesday 1 February 2023 16.00-17.00	Final online workshop	14	A recording of the session is available.

Equipment Used

3CL bought 8 headsets that worked on the principle of Google Cardboard, i.e. the user needs to insert a compatible smartphone in the headset to experience VR. The purchased model was the same indicated by the leading partner. The funding only permitted the acquisition of 8 sets (including shipping costs). 3CL tried to acquire other headsets to speed up the training process but could only bring 2 more headsets to the pool.

13 participants (22%) had an Apple iPhone whereas the training app could only be installed on Google Android-based smartphones. However, participants in the face-to-face training gladly gave their own Android-based smartphones to their colleagues with an iPhone to participate in the training.

Data Collection

The questionnaires in the English language, produced by the other project partners, were used for data collection. Each participant was assigned a unique identifier number. The code '06' was used as an identifier for responses from Malta. The questionnaires were delivered online through the Survey Monkey platform, as follows:

- Pre-questionnaire: https://es.surveymonkey.com/r/VRTEACHERs_PreTraining
- Post-questionnaire: https://es.surveymonkey.com/r/VRTEACHERs_Post
- Follow-up questionnaire: <https://es.surveymonkey.com/r/Follow-up-VR>

The pre-questionnaire was given to participants during the introductory online workshop and had to be done by the start of the face-to-face session. The post-questionnaire was done on-site as soon as the participant finished the VR experience. The follow-up questionnaire was released during the final online workshop. This explains the different participation rates in each of the three online questionnaires.

Spain

RECRUITMENT AND SELECTION OF PARTICIPANTS

Siglo22

- Recruitment and organization: Students from different education degrees studying at Universidad Autónoma de Madrid participated in the piloting phase of the project. For the recruitment, an email was distributed with an open call for the students to participate in the scheduled workshops.



- Selection of participants: 64 university students participated in the piloting phase on behalf of Siglo22, most of them with ages between 18 and 24 years old. Of these students, 11 were pursuing a degree in kindergarten education, 17 were in their fourth year of the Primary Education degree, and 36 were in their first year of the Physical Education degree.

UC3M

- Recruitment and registration: Participants were recruited through the distribution list of teachers at UC3M's School of Engineering. An email was circulated, describing the training activities, and providing a contact email for registration.
- Selection of participants: 7 teachers enrolled in the training activities, all of whom were from the Computer Science department of UC3M. Their teaching experience varied: 2 were novice teachers with less than three years of experience, another 2 had between five and ten years of experience, and the rest had more than ten years of experience.

PROFILE OF PARTICIPANTS

The piloting phase involved a total of 71 participants, 64 of whom were university students, most of them with ages between 18 and 24 years old. Of these students, 11 were pursuing a degree in kindergarten education, 17 were in their fourth year of the Primary Education degree, and 36 were in their first year of the Physical Education degree.

In addition to the students, seven university teachers with expertise in the field of computer science also participated in the piloting activities. These teachers ranged in age from 25 to 49 years old, with three teachers aged 25-29, three teachers aged 30-39, and one teacher aged 40-49. Five of them reported already having extensive experience with virtual reality technologies.

With regards to their gender, 30 of the participants were female and 21 were male.

METHODOLOGY AND IMPLEMENTATION ACTIVITIES

<i>Date and time</i>	<i>Location</i>	<i>Description</i>
<i>Wednesday 11 January 2023 10:30 – 12:00</i>	Online	Introductory online workshop
<i>Thursday 12 January 2023 09:30 – 11:30</i>	F2F meeting. Campus of Cantoblanco of the Universidad Autonoma de Madrid (UAM)	Face-to-face educational activities using VR
<i>Monday 16 January 2023 09:30 – 11:30</i>	F2F meeting.	Face-to-face educational activities using VR



	Campus of Cantoblanco of the Universidad Autonoma de Madrid (UAM)	
<i>Wednesday 22 February 2023</i> <i>10:30 – 12:00</i>	F2F meeting. Campus of Cantoblanco of the Universidad Autonoma de Madrid (UAM)	Face-to-face educational activities using VR
<i>Friday 24 February 2023</i> <i>11:30-13:30</i>	F2F meeting. Campus of Cantoblanco of the Universidad Autonoma de Madrid (UAM)	Face-to-face educational activities using VR
<i>Tuesday 28 February 2023</i> <i>10:30 – 12:00</i>	Online	Final online workshop

<i>Date and time</i>	<i>Location</i>	<i>Description</i>
<i>Thursday 9 February 2023</i> <i>18:00-19:00</i>	Online	Introductory online workshop
<i>Friday 10 February 2023</i> <i>11:30-13:30</i>	F2F meetings Campus of Leganés of Universidad Carlos III de Madrid (UC3M)	Face-to-face educational activities using VR
<i>Tuesday 28 February 2023</i> <i>18:00-19:00</i>	Online	Final online workshop

Equipment Used

The equipment used in the UAM activities included:

- 8 head-mounted display for mobile phones
- 4 Meta Quest devices
- 7 PICO VR devices

The equipment used in the UC3M workshop was:

- 4 Meta Quest devices

The mobile-based head-mounted displays and PICO VR devices used the Android version of the VRTEACHER app, while the Meta Quest glasses used the corresponding version of the app. Participants in the UAM training activities who had smartphones with the Android operating system downloaded and installed the app on their own devices and used the VR shells provided to carry out the activities. Participants with iOS operating systems on their smartphones were assigned the Meta Quest and PICO VR devices.

The 7 PICO VR devices and 1 Meta Quest was purchased with the project budget. The rest

of the equipment was provided by the Spanish project partners.

Data collection

To assess the impact of the application developed by the project, the Irish partner, with the help of the Cypriot organization, created three questionnaires to be carried out throughout the pilot phase. The questionnaires were accessible in all partner languages. The pre-questionnaire is answered before using the VRTEACHER application, to assess the participants' knowledge both in competences directly related to Virtual Reality and in competences related to soft skills such as empathy and problem-solving. The post-questionnaire was intended to be a comparison with the previous questionnaire, to observe changes and modifications in the results of the participants after having used the tool and immersed themselves in the scenarios proposed. The last questionnaire, Follow-Up, also aims to collect qualitative assessments of the participants and their feelings regarding the use of Virtual Reality as an educational tool.

Here are the links to the three questionnaires in Spanish:

- Pre-questionnaire: https://es.surveymonkey.com/r/VRTEACHERs_PreTraining?lang=es
- Post-questionnaire: https://es.surveymonkey.com/r/VRTEACHERS_POST?lang=es
- Follow-Up questionnaire: <https://es.surveymonkey.com/r/Follow-up-VR?lang=es>

Regarding the three sections carried out during the pilot phase, the first one was an approach to the VRTEACHER project and to the activities that would be carried out subsequently during the months of January and February. For this purpose, a Moodle course was created: <https://VRTEACHER.4eclass.net>. This course was the basis of the pilot, where participants could find all the materials needed to complete all the sections of the pilot. For the first section, the following materials were uploaded to the platform:

- Explanatory videos about:
 - the benefits of using Virtual Reality as an educational tool created by the Cypriot organisation CUT: <https://youtu.be/bQ3elazbdwU>
 - the phases of the pilot in order to position all participants: <https://youtu.be/SCr5lrz1YVA>
 - and the use of the Virtual Reality head-mounted displays: https://youtu.be/2us_oxhvwKM
- The tool's user manual was created by the project partners and translated into Spanish.

- A document for each of the groups listing their class together with their project reference code.
- The link to the pre-questionnaire in English, which all participants answered before using the VR training tool developed by the project.
- A QR code linked to the application for downloading to Android mobiles, with the relevant explanations for downloading.

The second section comprises all the face-to-face sessions in which the participants used the Virtual Reality goggles and the application developed by the project for about an hour or an hour and a half. The Spanish partners had a total of 4 Meta Quest devices, with the project application programmed internally, and 11 stand-type goggles to insert Android mobile phones with the downloaded application. Participants with Android mobiles used stand-type glasses, as they had the application downloaded on their mobiles. Participants with Apple mobiles were selected to use the tool from the Meta Quest glasses.

The UC3M partners were responsible for providing support to these individuals, as they were the experts in this type of device. The sessions lasted between 120 and 160 minutes and were organized as part of the practical sessions of the participants' university courses. While some of the students were testing the application, the remaining members of the student body were working on their university assignments. To assess the impact of the VRTEACHER application, a POST questionnaire was made available in Moodle for the participants to answer after finishing their experience with the VRTEACHER glasses.

The third section was dedicated to the Follow-Up activities, for which participants were gathered online and asked to give feedback on the whole experience. To ensure the maximum participation of all the people involved in the pilot phase, a deliverable was enabled in Moodle as a reflection for the participants to write about the following questions:

- Do you believe that incorporating VR technology into the classroom is a beneficial method for training students?
- Do you believe that incorporating VR technology into the classroom is a beneficial method for training students?
- Do you believe that the immersion you experienced as an avatar in a critical classroom situation has provided a more insightful perspective on your performance compared to traditional in-class learning methods?
- What advantages do you think this innovative procedure offers?
- Is there any aspect that you think needs improvement?

In addition, the final Follow-Up questionnaire developed by the project partners was also uploaded to Moodle.



6. Findings from the Impact Assessment in Europe

Through the combined 262 responses to the post-piloting questionnaire, the respondents were asked to assess the three developed scenarios' ability to broaden their outlook on difficult situations that could be experienced while remote teaching. To be able to capture the fullest impact of the VR tool, the responses have been categorized into four identifiable categories to be able to get the broadest picture of the impact of the tool. The categories are as follows:

1. **Empathy and Understanding:** these statements express an increased understanding and empathy towards the students' perspective and personal situations. For example, statements that mention putting oneself in the student's shoes, empathizing with their experiences, or gaining a deeper understanding of their challenges would fall under this category.
2. **Impact and Awareness:** these statements discuss the impact and awareness raised by the scenario, highlighting the importance of recognizing and addressing issues related to difficult issues or situations at home during remote learning. For example, statements that describe the impact the scenario had on the individual's perspective or understanding, emphasizing the need for increased awareness and acknowledgement of the problems that can occur during online classes, as well as highlighting the realization of the prevalence of bullying and abuse at home and the need to address these issues.
3. **Teacher's Role and Responsibilities:** these statements discuss the roles of responsibilities of teachers in addressing and dealing with instances of difficult situations, both online and in the classroom. For example, statements that mention the importance of teachers taking action and reporting incidents to the appropriate authorities, discussing the need for teachers to create a safe and supportive learning environment, and highlighting the responsibility of teachers to provide assistance and support to students who reach out for help.
4. **Importance of Support and Training:** these statements emphasize the significance of continuous support and training for teachers to effectively address and handle issues that can occur related to remote learning. For example, statements that mention the importance of ongoing training to equip teachers with the necessary skills and knowledge to deal with challenging situations, highlighting the need for support services professionals and collaboration with specialized teams, and



discussing the importance of having access to resources and guidelines on how to handle bullying and abuse situations.

Scenario 1

Taking this into consideration, when asked about the impact that the scenario had on their outlook towards engaging remote learners and dealing with the challenges of bullying and abuse at home, 38.55% of respondents reported that the scenario increased their empathy and understanding, while 37.40% reported that the scenario helped to increase their outlook about the need to increase their awareness about potential abuse occurring in the household when students are learning remotely. 16.41% of respondents found that the teacher plays a significant role in ensuring the safety of students who may be facing abuse in the home through in-house reporting measures, and 9.16% of respondents called for better support and training to be provided to staff looking to increase their skills when dealing with such situations. 2.29% of respondents' comments were unclear or said that the scenario had no impact on them. These responses demonstrate the positive impact of the scenario in promoting empathy, raising awareness, empowering teachers, and advocating for improved support systems for teachers when dealing with situations such as the one portrayed in the scenario.

Here is a small sample of some of the responses gathered from the surveys:

“It gives you a real-life perspective and makes you more aware of real-life situations.”

“When I was experiencing the student perspective, I felt that I could empathize and put myself in the student's shoes better. I felt very angry at the mother who was abusing the student.”

“It made me more aware that when having a student virtually accessing the lesson, he might not be alone and I might not be prepared for any interruptions that might occur.”

“I think it has been beneficial to be able to become aware of the different situations that can occur during an online class. And thus to be able to take a perspective of how we would act in certain situations.”

“We should not be absolute in the rules we set because we do not know what happens in the homes of students who are teaching remotely.”



Scenario Two

In relation to the second scenario, exactly 50% of respondents reported that the scenario experienced through the VR tool helped to increase their empathy and understanding surrounding psychological distress and phobias that students may be experiencing both online and in the classroom. 24.81% of respondents found that the scenario helped to develop their awareness around the impact that phobias can have on a student's experience of learning, while 13.95% highlighted the importance of the role of the teacher in understanding and supporting students who might find it difficult to learn during difficult worldwide events, such as COVID-19 Pandemic, when struggling with psychological distress. 9.69% of respondents called for greater support from teachers and educators concerning dealing with students with greater psychological needs, particularly about phobias. 3.11% of respondents' comments lacked clarity or stated that the scenario had no impact on them. These conclusions highlight the positive influence of the scenario in enhancing empathy, raising awareness, emphasizing the teacher's role, and advocating for increased support for students with psychological challenges.

Here is a small sample of some of the responses gathered:

“Unless one experiences a situation it is difficult to understand. This VR situation made me aware of possible similar situations.”

“It is a difficult situation and professional human resources would help to aid the situation. The VR experience made more aware of the student's perspective and I am more aware of how important it is to validate the student's feelings and to get her the right physiological help she requires.”

“Although I was aware of such phobias, this scenario actually made it feel very real in the sense that although we read about these things and try to prepare ourselves to face such situations, when you are actually faced with them you might be less ready to face it.”

“I had never thought about this possibility, i.e. that a pupil with a phobia or anxiety about the virus breaks the dynamics of the classroom and as a teacher it is necessary to know how to react so that the pupil can overcome the anxiety attack and know how to continue teaching the class without losing control.”

“I think this is a situation that can happen and has happened on many occasions. I also think that we are not prepared as teachers to deal with situations.”



Scenario 3

In the final scenario, respondents were asked to assess the impact that the third scenario had on their outlook towards engaging students from different cultures in the classroom. Nearly half of the respondents (43.80%) reported that the scenario gave them greater empathy and understanding for students who are joining a classroom and facing cultural barriers. 24.03% of respondents reported that the scenario helped them to gain a greater awareness of potential situations that they themselves have not encountered in the classroom but could in the future, while 16.28% of respondents found that the teacher had a significant role in the integration of students from different cultural backgrounds. Similar to scenario 2, 10.47% of respondents found that there is a greater need for support and training for teachers who will encounter these types of scenarios in their classrooms. 5.81% of respondents' comments lacked clarity or found that the scenario had little impact on them. These conclusions underscore the scenario's effectiveness in fostering empathy, promoting cultural awareness, acknowledging the teacher's role, and advocating for additional support and training in multicultural education.

Here is a small sample of some of the responses gathered:

“It is more common than it seems and as a teacher it is essential to be clear about the lines of action, which is why this experience is enriching.”

“This scenario helped me understand better the student's point of view. This will help me better empathise with refugee students and will pay more attention to cater to their needs in a holistic way.”

“This scenario made me realise that it takes time and training to be able to make refugee children feel at home in a different environment.”

“Many times educators are not aware of the difficulties that students coming different cultures, encounter or pass through, especially if an educator is used to teaching in a school which is not multicultural. Watching this scenario provides insight for educators to reflect on about the world that these students experience.”

“It gave me alternative behavioural options towards these students for more effective communication, with increased empathy experience.”



Reflection on the Experience

The analysis of the comments reveals several common themes regarding the experience of using a VR tool for experiencing difficult situations when teaching remotely. The most prevalent themes include the immersion and realism of the VR experience, with positive feedback on its ability to build empathy and understanding. However, comfort and physical effects were also frequently mentioned, with users experiencing discomfort, dizziness, or eyestrain. Audio quality and interaction were highlighted as areas for improvement, along with suggestions to enhance graphics and visuals for a more realistic experience. Technical issues, classroom environment, and scenario design were also discussed, along with feedback on device compatibility and the desire for more engaging user experiences. Reflective learning, image quality, and positive feedback were additional themes present. These findings provide valuable insights for enhancing the VR tool, addressing comfort issues, improving audio and visuals, refining scenarios, and optimizing user engagement.

Here is a small sample of some of the responses gathered:

“All scenarios helps building emotional intelligence, awareness and understanding.”

“The scenarios were suitable. The voices seemed computerized at times. It would help if they were someone real speaking.”

“The immersion capacity is very high. On the other hand, dizziness and eyestrain caused by the glasses is the most negative aspect.”

“I was quite impressed by the different scenarios and how realistic the situations felt.”

“I thought it was a very good and creative idea to train teachers in specific situations in the classroom.”

Follow-Up Reflection

When asked to reflect on the experience a few weeks later, 156 participants responded to the follow-up survey. After analyzing the provided statements, several common themes emerge. The majority of comments express appreciation for the positive experiences using the VR tool. Many respondents commented on the realism of the scenarios, with many of the comments highlighting the everyday scenarios teachers encountered. Approximately a quarter of respondents commented on the scenarios' ability to shed light on student issues. Some respondents mention room for improvement



and the importance of considering different perspectives. The significance of technology in education is also mentioned. Additionally, some respondents highlighted the VR tool's ability to provide teachers with the tools to combat complex situations, as well as the impact of first-hand experience, and the enhancement of communication and interpersonal skills. Lastly, a small portion of the remarks acknowledge the practical application and conceptual understanding facilitated by VR training. Overall, these themes underline the value of immersive experiences, empathy development, and the role of technology in education.

Here is a small sample of some of the responses gathered:

"I consider that the VR Teacher tool has allowed me to put myself in the students' shoes in situations that are difficult to understand from the outside, which has helped me to better learn how to manage this type of situation."

"It was a very positive and interesting experience. In my opinion such technology is very important to both teachers and students. It will make lessons more interesting for students while teaching the valuable skills and values such as empathy."

"I was impressed by the use of technological means, in this particular case, virtual reality means, to approach the present subject. The phases of the program were very organized and especially the second phase excited me because that was where the practical part was. I really enjoyed being able to experience different perspectives it left me with vivid memories and strong emotions. It would be nice if my students could experience it too."

"The scenarios gave me strange feelings as I had never put myself in the situation of teachers in everyday situations that may occur. I learned that we must be prepared to try to solve any situation as well as possible."

"The impact that VR training has had I think it is important to live it and experience putting yourself in other people's shoes in complex situations or discussions."



7. Critical Analysis

IMPACT OF THE SCENARIOS

The impact of the VR tool and the scenarios developed within it on teachers has been significant, as evident from the feedback provided by participants. The VR tool has effectively influenced teachers' perspectives on engaging remote learners and addressing the challenges of bullying and abuse at home. By immersing teachers in a virtual environment, it has enhanced their skills and facilitated productive learning experiences. The tool sheds light on various forms of abuse that students may face at home, making educators more aware of these realities. It emphasizes the importance of taking immediate action, reporting incidents, seeking help, and adhering to safeguarding rules.

The immersive nature of the VR experience enables teachers to empathize with students and understand their perspectives more effectively. It has made teachers aware of potential disruptions and distractions students may encounter at home, leading to considerations such as turning off cameras in certain situations. The scenario has also raised awareness about the ongoing need for continuous support and training to effectively tackle bullying and abuse in remote learning environments.

Additionally, the scenario's development has significantly influenced teachers' outlook on engaging students with psychological distress and phobias arising from events like the COVID-19 pandemic. It has provided teachers with a unique opportunity to experience and comprehend the challenges these students face, which may be dangerous, difficult, or impossible to replicate in real-life situations. Teachers have recognized the importance of developing collaboration and social skills, fostering interpersonal relationships, and creating a safe environment for students. The scenario prompts teachers to reflect on diverse strategies and perspectives, highlighting the necessity of support from a team of professionals and available resources. Furthermore, it underscores the significance of validating students' feelings, seeking assistance when needed, and adopting tailored approaches to meet individual needs.

Moreover, the scenario has significantly impacted teachers' perspectives on engaging students from different cultural backgrounds in the classroom. By immersing teachers in a virtual environment, it cultivates competences and skills such as empathy and enables them to see students from diverse vantage points. Experiencing students' perspectives allows teachers to better understand challenges related to language barriers and cultural differences. The scenario emphasizes the importance of diversity and inclusion,



highlighting the need for teachers to be mindful and treat all students equally. It reinforces the necessity for teachers to ensure inclusion for all students, regardless of their cultural background.

The VR experience increases awareness and encourages the adoption of strategies to support students from diverse cultures, fostering a more inclusive and supportive classroom environment. The scenario also highlights the need for additional training to assist teachers in effectively integrating students from different cultural backgrounds.

Overall, the VR scenario has had a positive impact on teachers, making them more supportive, empathetic, and better equipped to address the challenges faced by remote learners. It has heightened their awareness, empathy, and preparedness to handle situations involving students with psychological distress and phobias, ultimately fostering a more inclusive and supportive learning environment. The impact of the scenario is profound, nurturing empathy, awareness, and a commitment to inclusive education.

POTENTIAL IMPROVEMENTS

When considering the impressions and potential improvements for both the VR tool and the scenario, the feedback from participants was diverse. While the VR tool was generally praised for its ability to build emotional intelligence, awareness, and understanding, some areas needed attention. Users commonly reported discomfort, dizziness, and the need for better headset adjustment and screen calibration. The lack of interaction and the experience of feeling more like watching a video was mentioned by some participants. Suggestions included compatibility with Apple phones, improved graphics, and the use of human voices. The image quality, audio clarity, and script quality were also identified as areas for improvement. Participants noted distractions caused by unrealistic images and classroom noise, as well as the repetitive nature of certain dialogues and limited immersion.

Despite these critiques, the VR application was commended for its immersive nature and its ability to offer different perspectives. Participants found the scenarios suitable for training and appreciated the opportunity for reflection. In conclusion, while the VR tool showed promise, it requires enhancements in graphics, interaction, audio, and overall realism to create a more engaging and effective learning experience.

Teachers provided additional feedback regarding the VR application and the showcased scenario. Some expressed inconvenience when using the VR headset while wearing eyeglasses, while others desired compatibility with iPhones for easy accessibility. Teachers recognized the tool's usefulness in teaching empathy and kindness, but some

felt the need for more interaction. Feedback on the comfort and size of the glasses was given, suggesting improvements. The bright colors used in the scenarios were mentioned as causing discomfort or dizziness by some teachers, while others found the experience positive and interesting. There were varying opinions on the practical application of VR in the classroom, with some expressing uncertainty and others highlighting its potential benefits and recommending follow-up lessons. Suggestions were made to eliminate the need for physical movement and create steadier scenarios.

Overall, teachers appreciated the experience but held mixed opinions about its length and practicality in larger classrooms. The addition of more scenarios and realistic audio was suggested. While recognizing the value of VR for enhancing empathy and understanding, some teachers desired clearer guidance and less repetitive questioning. Despite minor issues, many teachers found the experience fruitful, enjoyable and recommended it for educational purposes.

LONG-TERM IMPACT FROM THE FOLLOW-UP QUESTIONNAIRE

Several weeks after the initial pilot, a follow-up questionnaire was administered to assess the long-term impact of the VR tool and scenarios on the participants. The teachers expressed that the VR training had a significant and lasting effect on their understanding and approach to teaching. They were amazed by the everyday situations presented to them, realizing the importance of being aware of and equipped to handle such scenarios. The VR experience allowed them to empathize with students and gain a deeper understanding of their struggles. The teachers appreciated the realistic nature of the scenarios and acknowledged the need for continuous improvement. Putting themselves in the students' shoes and seeing situations from different perspectives was enriching for them. The VR training underscored the significance of technology in education and its complementary role to traditional teaching methods. While some teachers mentioned the length of the stages and the desire for more realistic experiences, others found the scenarios thought-provoking and reflective of real problems students face.

Overall, the teachers believed that the VR training helped them develop empathy, interpersonal skills, and a better understanding of complex classroom situations. They recognized VR as a valuable tool for exploring intricate concepts and enhancing communication and interpersonal skills necessary for the future. However, there were both positive and negative impressions regarding the tool and scenarios, indicating areas that require improvement. Users were impressed by the realism and sense of reality experienced during the VR training, but concerns were raised regarding the quality of graphics, audio, and overall user experience. Suggestions were made to enhance user



participation, improve visuals and interactivity, diversify scenarios, reduce repetitive content, create a more comfortable and less dizzying VR experience, include disciplinary situations, and provide clearer instructions and guidance within the VR environment.

Despite these areas for improvement, users generally had a positive experience, appreciating the opportunity to gain different perspectives and understand students' feelings. They acknowledged the potential of the VR Teacher application and stressed the importance of continuous development and improvement, particularly in terms of visual quality, user participation, and comfort. In conclusion, the long-term impact of the VR tool and scenarios on teachers was largely positive, with valuable insights gained and a recognition of the tool's potential for enhancing teaching and fostering important skills and values.



8. Conclusions & Recommendations

The VR tool and scenarios developed within it have had a significant impact on pre-service and in-service teachers, as evident from the feedback provided by participants. The immersive nature of the VR experience has enhanced teachers' skills and facilitated productive learning experiences. It has influenced their perspectives on engaging remote learners and addressing challenges such as bullying and abuse at home. The VR tool sheds light on the various forms of abuse that students may face, making educators more aware of these realities and emphasizing the importance of taking immediate action and adhering to safeguarding rules. Additionally, the VR experience enables teachers to empathize with students and understand their perspectives more effectively, leading to considerations such as turning off cameras in certain situations. The scenarios have also raised awareness about the ongoing need for continuous support and training to effectively tackle bullying and abuse in remote learning environments.

The development of scenarios within the VR tool has also significantly influenced teachers' outlook on engaging students with psychological distress and phobias, as well as students from different cultural backgrounds. By experiencing these scenarios, teachers develop collaboration and social skills, fostering interpersonal relationships and creating a safe environment for students. The VR tool cultivates empathy and enables teachers to see students from diverse vantage points, better understanding challenges related to language barriers and cultural differences. It emphasizes the importance of diversity, inclusion, and treating all students equally. The VR experience increases awareness and encourages the adoption of strategies to support students from different cultural backgrounds, fostering a more inclusive and supportive classroom environment. This helps to build and improve upon the empathy skills of both pre-service and in-service teachers and educators by giving them adequate tools and resources to experience simulations of real-life situations in a safe learning environment.

Overall, the VR tool has made teachers more supportive, empathetic, and better equipped to address the challenges faced by learners. It has heightened their awareness, empathy, and preparedness to handle situations involving students with psychological distress and phobias, ultimately fostering a more inclusive and supportive learning environment. The long-term impact of the VR tool and scenarios on teachers has been largely positive, with valuable insights gained and a recognition of its potential for enhancing teaching and fostering important skills and values. While improvements are needed in areas such as graphics, audio, and user experience, participants appreciated



the opportunity to gain different perspectives and understand students' feelings, acknowledging the continuous development and improvement required for the VR tool to reach its full potential.





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