IO2:

TARGET GROUP SURVEY

*Fostering **V**irtual **R**eality applications*
*within **A**dult **L**earning*
to improve low skills and qualifications

Author:

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TABLE OF CONTENTS

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Acronym: ViRAL Skills

Title: Fostering Virtual Reality applications within Adult Learning to improve low skills and qualifications

Project No.: 2018-1-AT02-KA204-039300

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INTRODUCTION AND BACKGROUND:

The design, implementation and results presentation of the current target group survey are introduced in the framework and as part of the ViRAL SKILLS project, which receives European co-funding under the European Erasmus+ Strategic Partnership programme for adult education. As the main aim the project with its activities and outcomes is focusing on finding ways of including modern virtual reality based technologies (hard and software) into adult learning and development processes and enable adult trainers and educators to include technology into their didactical and methodological setup and training plan.

To be able to achieve a maximum impact with the outcomes and result of the ViRAL SKILLS project in the sense of a successful dissemination and exploitation of results, it is crucially important to ensure a maximum of relevance of the results for the final target (user) group. Out of this reason, the project has implemented as well as is still implementing a number of steps and actions to raise / ensure the target group relevance. In a first step, the project partners have conducted a brief survey within a group of VR and technology based learning experts. The main aim of this first step was to find out about a current status quo in the technology development in VR as well its potential and expected developments in the near future. This first step made it possible to focus the activities and the developed content on most recent technological developments and include or at least envisage the upcoming trends and possibilities in virtual, augmented and mixed reality application. This first research step has created one cornerstone of the upcoming development of a comprehensive training programme for adult trainers on how to include virtual reality into their didactical processes. However, before this consecutive step is performed, the project work programme foresees also the inclusion and consideration of the potential, wishes, knowledge base, fears and challenges of the target group itself. This shall be implemented in the course of a target group survey, which has been planned and implemented by all project partners in the partner countries of the ViRAL SKILLS project. In each of the partner countries (AT, DE, ES, IT, IE, CY) a minimum of five representatives of the target group consisting of adult education managers, educators and trainers were questioned concerning their:

- basic awareness of VR learning possibilities,
- attitudes towards this issue
- fear, expectations, needs and demands when considering applying VR learning as an integrated part of their training offers, especially to low-skilled and low-qualified learners with a focus on basic education

Based on the selected and agreed methodological considerations all partners were supposed to implement the target group survey with a minimum of 5 representatives of the target group during the months of May and June 2019. The following pages are supposed to present the key findings and outcomes of the survey as well as deductions for the further proceedings in the curriculum development.

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METHODOLOGY

In front of the information and approach provided in the work programme of the project application, methodologically the target group survey is supposed to build on two pillars.

a) Conduction of a questionnaire based quantitative survey

b) Conduction of qualitative interviews with target group representatives

In front of this, the agreed methodological plan did foresee for all project partners the identification of min. 5 representatives of the target group in their country / surrounding. After a short introduction the target group members were provided with a short quantitative questionnaire with mostly closed questions offering certain answer possibilities and categories. Interviewees were supposed to fill this questionnaire in a maximum time of 10 minutes. After that the target group members were asked in a qualitative interview about their opinions and ideas on the basis of an open interview questionnaire / guideline. The time foreseen for the qualitative interviews was planned for about 45 minutes, finally it turned out that the answering time was slightly longer than these 45 minutes, however, none of the target group members did express any problems with that. The interview guidelines provided by P1 have been developed in a way that in a first step core questions were raised and discussed in the qualitative interviews and then a number of support questions were provided for partners in case the interview went slowly or if interviewers needed an additional prompt to lead the interview in a certain direction. Partners were given the possibility to either record the interviews or make direct notes about the core statements and answers during the interviews.

After the interview implementation partners were asked to fill one quantitative template which contained all the statistical and quantitative information of the 5 interviews conducted as well as 5 separate feedback templates with all the qualitative information received during each of the interviews. Already in this step partners were asked to present the qualitative information received in a concise and compact way to make the data analysis and presentation easier afterwards. All results and templates have been sent to P1 Auxilium, who is the responsible partner for the data processing and data presentation of this target group survey.

In front of the basic setup and design which foresees a minimum of 5 interviews per partner country and the fact that the project partnership is consisting of overall 6 European countries, the data basis on which this target group survey is built is 30 interviews with adult education trainers, educators or managers. This is of course a rather small sample without any claim of scientific relevance which, however, was also not the aim of the target group survey overall. The main aim here is to get an overview and insight into the needs and requirements of the target group and to use this information to maximise the target group relevance of the results and outcomes of the project.

Generally, in front of the small statistical sample we are following a pure phenomenological approach in the results presentation, which allows us to present certain relevant phenomena together with some small statistical basis or qualitative explanation. Based on this, certain relevant deductions for the further development of the outputs of the ViRAL SKILLS project and especially the training programme curriculum are made. The results presentation on the following pages will in a first step show the quantitative results received in the first part of the interview and in a second step the qualitative interview data will be presented. As presentation format of the quantitative data we have chosen the format of a circle diagram which allows getting an easy graphical overview of different answers and

their statistical dimension / relevance. For the qualitative data we have chosen the presentation in a word cloud format. The word cloud is an interesting way to compare and comprehend qualitative data, single words used in the interviews will be counted and depending on the number of counts appear as a larger or smaller word in a certain word cloud for each singe interview question. The word cloud will allow us to visualise the importance of single words used for each question and be the basis for the results interpretation and deduction of recommendations for the further project outcomes.

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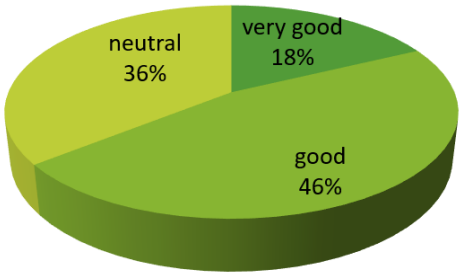
QUANTITATIVE SURVEY RESULTS

How do you rate your general e-learning experience in an educational context?

How do you rate your general e-learning experience in an educational context?



Initially it appears to be very positive, that a large majority of the respondents already had very positive or positive experiences with e-learning in an educational context. In front of this, we can assume that there is a positive basic attitude towards innovative and technology based learning formats. None of the respondents stated that they had negative or very negative experiences with e-learning and technology based learning in an educational context. At least the group of target group representatives asked in the partner countries would provide an open mind towards learning technology and innovation, we can expect that there would be no barriers because of bad experiences in the past. Nevertheless, 36% of the respondents stated that they had neutral experiences which gives some cause for concern and should be considered when advertising for the training programme and the other outputs of the ViRAL SKILLS project. Concerning the update of innovation and technology and in front of the above mentioned share of positive, good or neutral experiences the theory of diffusion of innovation by Prof. Everett Rogers should be considered which states that the uptake of innovation is done in 5 steps and by 5 different groups of people:

1) Innovators (about 2,5 % of people who take innovations immediately after emerging)
2) Early Adopters (about 13,5% who are also fast with innovation uptake and use)
3) Early Majority (about 34% who adopt innovation after a varying degree of time)
4) Late Majority (about 34% who adopt innovation significantly later than the majority)
5) Laggards (about 16% who are the last to adopt an innovation)

With the whole development and implementation of the ViRAL SKILLS outputs it should be tried to identify and focus on representatives of the first three categories of people within the target group of the project. (*Rogers, Everett (16 August 2003). Diffusion of Innovations, 5th Edition. Simon and Schuster. ISBN 978-0-7432-5823-4.)*

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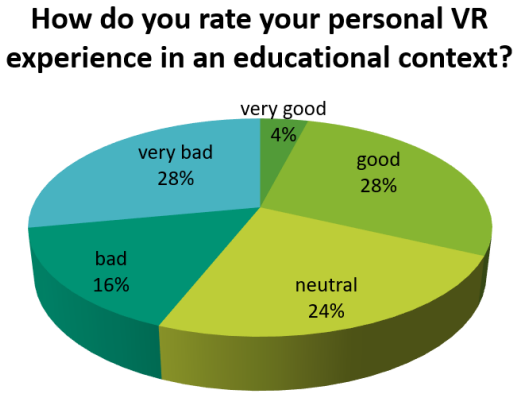
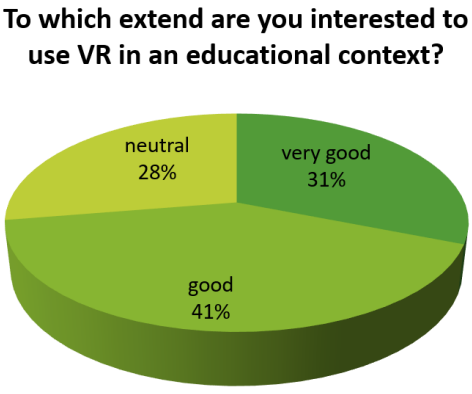
How do you rate your personal VR experience in an educational context?



The picture received about personal VR experience in an educational context appears to be much more diverse and critical. Only 32% of the survey participants answered this question with very positive or positive, about ¼ of the interviewees gave a neutral answer and 44% (!) have a negative or very negative answer. Without an additional qualitative comment for this question it is of course difficult to find proper reasons for this critical picture, nevertheless what we can interpret is that basically educational content has so far not been the most important reason for using VR technology, much more it is about gaming and 360 degrees video etc. In front of this we can assume that most likely people did hardly use VR technology for educational purposes at all and did so answer this question with a quite negative scoring. However overall we should not forget that within our target group there is a quite large share of people who already had negative experiences with VR technology in learning who should be treated carefully. Again, this is an additional argument that during the introduction of the ViRAL SKILLS outputs the innovators, early adopters and early majority representatives should be identified and actively approached.

To which extent are you interested to use VR in an educational context?



The answers to this third quantitative question to a certain extent support the interpretation and explanation of the picture for question 2. If this large share of target group representatives would really have had a bad or very bad experience in VR technolgy based educational settings, this picture for question 3 appears to be contradictory. 72% of the respondents stated that they would like to use VR in an educational context, which is a very positive and promising picture. If we would really have 44% of target group members with negative or very negative experiences (see question 2) , this would not be possible. Overall we can expect a large majority of adult trainers, educators or managers willing to activey use VR technology in an educational context which forms a promising basis for the dissemination and exploitation of the project results within the ViRAL SKILLS project.

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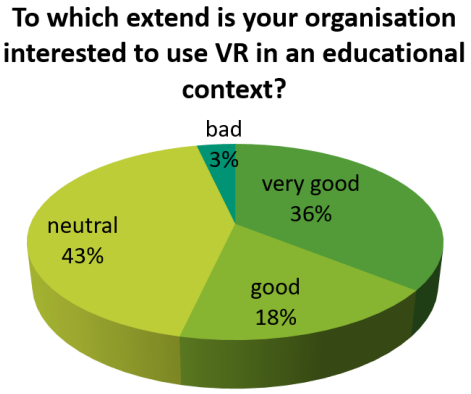
To which extend is your organisation interested to use VR in an educational context?



When it comes to the interest of the single adult education organisations to use VR in an educational context, the picture again appears to be more critical and diverse. Whereas we have still 54% of organisations that are very much or at least much willing to use VR technology in future for educational purposes we have 43% who are not really decided and another 3% who are obviously not willing to introduce or use VR technology in future. Since we do not have any additional qualitative comments or explanations for this picture we can only assume that this has something to do with the financial impact such a step means for adult education institutions. The VR technolgy equipment, its purchasing costs and also its maintenance effort does mean quite some financial investment for the education institutions, which they naturally fear and would probably lead to a more critical result for this question. In front of this 2 core deductions could be made for the ViRAL SKILLS project as well as on a general level. On the one hand the project and its solutions should consider the investment dimension and fear from the side of adult education institutions in the sense that cheaper systems and systems with an immediate and really high cost-benefit-ratio are used and introduced within the project and on a more general level on the other hand some thoughts should be raised towards co-financing and financial support for adult education institutions for the setup of VR based learning studios, this would and should be an issue for public institutions and funding agencies.

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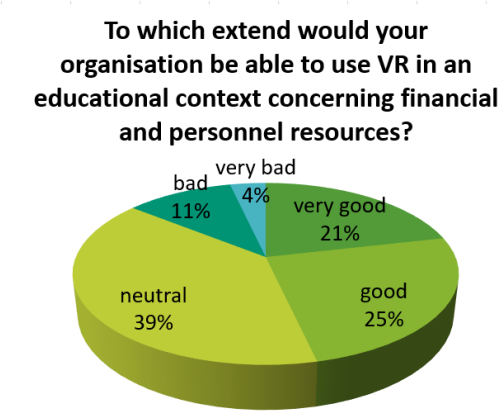
To which extend would your organisation be able to use VR in an educational context concerning financial and personnel resources?



The answers given for this question support very much the assumptions and interpretations developed for the previous answer. When asked about the possibilities to use VR technolgies in learning and education in front of the existing personnel and financial resources we see a quite critical picture. Only 46% give a positive answer to this question and 39% of respondents see this question with a neutral opinion whereas we have 15% who state a negative or very negative outlook concerning this issue. It is absolutely clear that we have to consider the financial and human resource constraints in adult education in Europe when speaking about the introduction, potentials and possibilities of VR technologies in learning. Both limiting factors should be considered within the project but also beyond, adult education is for sure a sector which has to suffer from limited financial possibilities especially when it comes to more general adult education including basic education. Whereas the ViRAL SKILLS project would not be able to impact too much on the financial constraints, it would nevertheless be possible to impact on the human resource barriers with better trained and competent adult educators and trainers which, besides the pedagogical and didactical knowhow to use VR technologies in education and training, should also receive basic competences on technological level to be able to introduce, use and maintain VR systems and technology. The technological competence level would be important to consider when developing the ViRAL SKILLS training programme for adult educators.

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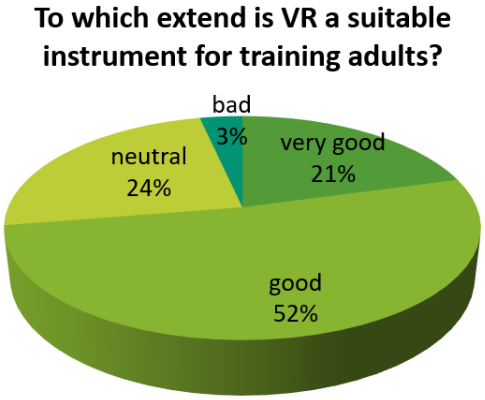
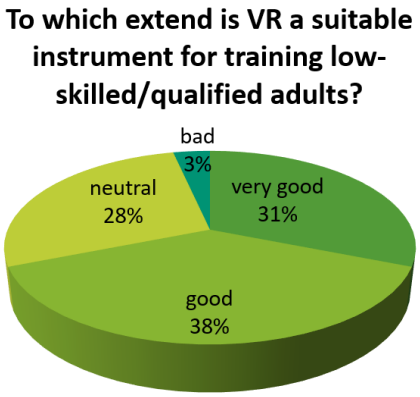
To which extend is VR a suitable instrument for training adults?



About ¾ of the respondents state that VR is a very or at least suitable instrument for the training of adults in general. This is of course a very positive feedback that we received from our target group which also supports the assumptions and theoretical background stated in the project application of the ViRAL SKILLS project. Only 3% of respondents mention that VR would not be a suitable instrument which is basically neglectable. Overall we can build on this promising basis that with VR technology we have an innovative and suitable instrument for adult learning which is not only the view of the project partnership but also of the project direct target group, the adult educators, trainers and managers.

To which extend is VR a suitable instrument for training low-skilled / qualified adults?



A nearly similar picture is received for the next question about the suitability of VR technology especially for the learning of low skilled / qualified adults. Again nearly ¾ of the respondents find the potential very good or good and only 3% see the suitability of VR technolgies critical (bad). These answers do also support the assumptions in the project application and form a fruitful basis for the introducion of the ViRAL SKILLS project outputs within the target group. Also in front of this positive estimation it would be important to especially highlight the possibilties and advantages of VR technolgies for the learning of low skilled / qualified adults which are certainly located in a very much experiential learning process, a hands on learning and trial and error learning in a virtual environment. When selecting software and hardware for its learning contributions these dimensions should be considered and especially highlighted e.g. in the presentation of software in the ViRAL SKILLS E-thek.

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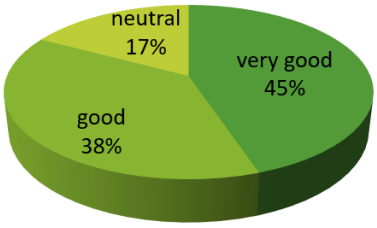
How helpful would you consider an online handbook for adult educators on how to integrate VR in adult learning settings?

On one hand it is not really surprising and on the other hand it is very positive that a vast majority (83%) of target group representatives consider a handbook about the integration of VR in adult learning settings is a very good or good thing. None of the respondents has stated a negative or very negative feedback towards this core project output. It can therefore be assumed that this core output of the ViRAL SKILLS project will fall on very fruitful and promising ground within the target group. There is no doubt that adult educators, trainers or managers will make use of this output and that the project with its outputs has met the pulse of time in adult education.

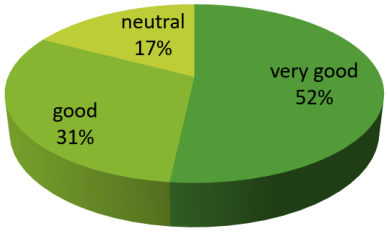
How helpful would you consider anonline handbook for adult educators on how to integrate VR in adult learning settings?



How helpful would you consider an online database of VR systems, technical / structural requirements and how to set up a VR studio?

A similar picture with slightly more very positive answers is received concerning the planned online database of VR systems. Again 83% of respondents find this output very helpful or at least helpful for their future work. Also with this output the project can expect considerable use and dissemination impact within the core target group.

How helpful would you consider an online database of VR systems, technical/structural requirements, and how to set up a VR studio?



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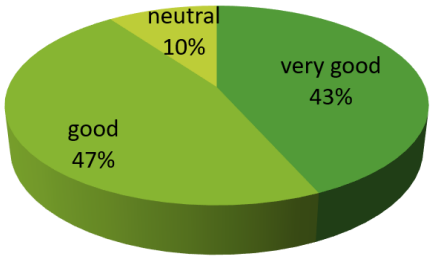
How helpful would you consider an online collection of VR software reviews suited for the needs of adult learners?

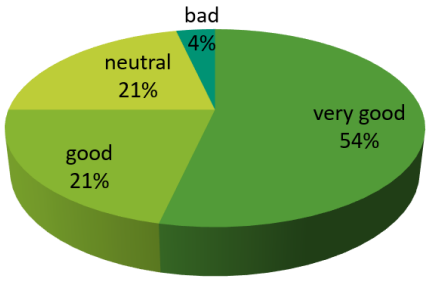
Also for the planned e-thek, the online collection of VR software reviews suitable for the needs of adult learners, the feedback is positive. It is even more positive than for all the other outputs foreseen with 90% of very positive or positive answers. Basically this tells us two things. On the one hand and again the selection of outputs within the ViRAL SKILLS project has been a very good one, it meets the puls of time and we can expect a high uptake of innovation and development within the target group. However, it also tells that the most concrete output with the highest potential for immediate and practical use receives the most positive values. This appearts to be a slight challenge for this particular output development. The partnership needs to make sure that the selected software applications are described and presented in a very clear, easy to read and understand way using visualisation as good as possible to guide adult trainers and managers when wanting to make use of single software solutions for their adult training processes.

How helpful would you consider an online collection of VR software reviews suited for the needs of adult learners



How helpful would you consider a blended training course regarding Virtual Reality for adult education with a duration of five days classroom, five days onilne featuring webinars?

How helpful would you consider a blended training course regarding Virtual Reality for adult education?



Exactly 75% of all respondents would estimate also the third intellectual output of the ViRAL SKILLS project which will be a training course regarding VR for adult education. This is on one hand very positive and will also ensure a good dissemination and participation effect in the training course in the long run, however, we have to consider that also 21% have a neutral and 4% even a slightly negative opinion towards this output and offer. Since we do not have any additional qualitative information for this question directly (there will be additional discussions related to this output within the section of qualitative analysis in the following chapter) we cannot identify any concrete reasons for the negative estimations. However, the only recommendations we are able to directly deduct from this is – carefulness. This means carefulness during the development process of this intellectual output regarding content, complexity, didactical formats, the combination of face to face and distance learning, the use of webinars for training purposes etc. In a second step this does also mean carefulness during the internal and external feedback and evaluation process. Luckily the projects' workprogramm foresees an intense internal and external testing session of the whole curriculum and contents, this should be closely evaluated and followed by the responsible partner organisations. Deducations from feedback received should be made thoroughly and immediately.

QUALITATIVE SURVEY RESULTS

What is your opinion on e-learning or IT supported learning in general?

When asked about the general opinion on e-learning or IT supported learning in general we receive a quite diverse and diffuse word cloud which shows the quite different and diverse answers given in the interviews. Of course the term learning appears to be the most important within all the answers but the more important hints are a little bit hidden behind these overarching and important terms. Basically the answers about personal opinions are positive and reach from the fact that it is simply important and unavoidable to use e-learning and IT supported learning nowadays to positive arguments about the potential for IT based and supported learning especially for learning of factual knowledge. E.g. trainers in Austria mention that the use of IT supported learning in class would also need a different didactical setup and that these new learning formats would not be able to replace adult trainers completely (however, this appears to be more a personal fear than provable facts). For Irish trainers it seems that IT supported learning in class is a perfect added value for learning processes and make learning more motivating (this is also shared by trainers and adult educators from Germany), however Irish trainers raise concerns related to distance e-learning formats especially concerning technical problems which makes connection not always possible, synchronous distance e-learning forms are always a problem this related to e.g. webinars ("1 day in a classroom tend to be more effective than 6 weekly webinars"). This is definitely something that has to be considered in the training programme development which also has a strong and broad distance learning component. The issues around technical problems with access to webinars etc. and the lack of personal contact and discussions need to be actively approached. The word cloud mentions the term technology quite often and in a prominent way, again, we have to make sure that the training programme developed also contains topics such as technical maintenance and troubleshooting with VR and learning technology. Besides quite many positive terms around learning, motivation, knowledge etc. it appears that the term "however" is also quite prominent. This should probably mean that there are a lot of positive values behind e-learning and IT based and supported learning for adults, but there are also a number of constraints and limiting factors which should also be considered. A German trainer mentions that overall the raising of awareness towards the use of IT and VR in learning should not be forgotten. This appears to be important also for the ViRAL SKILLS project and its dissemination activities. Only if there is enough awareness within the target group, innovation uptake will be possible.

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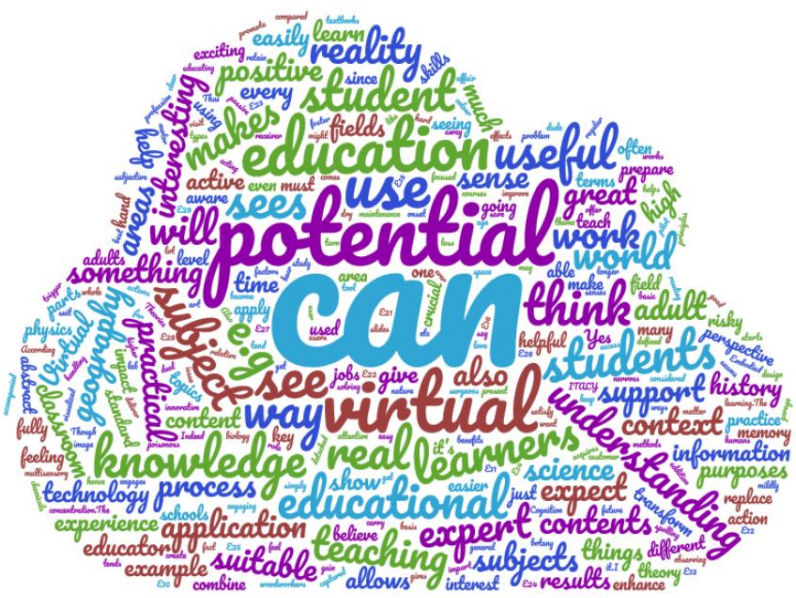
Where do you see potential for application of VR for educational purposes in general?



The word cloud for the question about the potential of VR in the field of adult education is quite clear and convincing. The by far most mentioned term is the word “can” which clearly means that in the overall opinion of all adult educators and trainers virtual reality technology can have a potential for adult learning and shows the basic positive attitude of the asked target group representative towards this technology trend. Trainers are often speaking about the potential of the technology together with its positive effects on the motivation of adult learners. Moreover respondents mention the possibility to visualise difficult topics and make them easier accessible and understandable. There is hardly any doubt in all partner countries about the general usefulness of VR technology for adult learning. Whereas trainers in Austria see VR technology suitable for practically any subject and field, trainers in other countries e.g. in Cyprus do see the technology more for learning in the fields of mathematics or science. For Spanish trainers the potential of VR technology lies in the fact that it makes training of subjects possible which are otherwise difficult to teach in a classroom environment. Irish trainers also state a positive feedback overall, however, do also mention that as a trainer you need to have solid knowledge about your subject and also audience when planning to use and introduce VR technologies in the didactical process. Again it is mentioned and also visible in the word cloud that learning of factual knowledge seems to be a great potential of VR technologies. Overall the answers and feedback received from trainers and managers in all partner countries draw a very positive picture about the potential of VR technologies for educational purposes. An Italian trainer mentions: “Immersive VR education is by default much more exciting affair than just sitting in a classroom listening to some mildly interesting dude spelling things.”

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What would be your biggest fear/concern regarding VR in an educational context with adults?

When asked about their biggest fears and concerns related to the use of VR technologies the word cloud for the answers show that there are a number of considerable and serious concerns and fears within the target group representatives. When analysing the answers more in detail we are able to identify three different levels of constraints:

a) **Trainer level:** many interviewees mention the fact that they fear that trainers are simply not enough qualified to make full use of VR technologies in their learning processes. This is very clearly mentioned by trainers from Austria and Spain. However on the other hand this is something which is probably to be solved quite easily with the training programme developed and provided by the ViRAL SKILLS project.

b) **Health level:** Especially trainers from Austria, Ireland and Germany mention that there could be considerable health problems attached to the use of VR technology, some call it dizziness, motion sickness or nausea including the loss of spatial awareness. This is unfortunately one of the biggest disadvantages of VR technology and quite difficult to control and influence. It might easily happen that within one training group one or more people are showing these reactions and could not fully participate in VR based activities. The most important issue, however, is to be aware of these reactions and to be able to recognise them early. The training programme developed within the ViRAL SKILLS project should in any case consider these existing reactions, train the trainers how to introduce VR, how to recognise nausea and motion sickness etc.

c) **Learner and social level:** The fear of getting lost somehow in a virtual environment and not being able to find the way back into reality appears quite often in the feedback from trainers from Cyprus and Italy (“My concern is the use of VR in a context, without causing loneliness, and social problems such as isolation that is noted from the use of social media.”, “While virtual reality can be a great asset for most of the existent fields of activity, it can also be a huge disadvantage. The traditional education is based on personal human communication and interpersonal connections. Virtual reality is quite different; it is you and the software, and nothing else. This can damage the relationships between students and the overall human communication.”

   Also for this level, the ViRAL SKILLS training programme should offer some content and help for trainers. It is within the trainer competence to cleverly use and introduce VR technology in their didactical process and consider the risk of people getting lost in a virtual reality environment, which is already known from social media applications and IT use in general. Definitely the risk with VR technology is even bigger, since it is able to simulate life reality in a virtual way quite convincingly which no other technology is able to do nowadays.

To implement VR training for adults, what kind of requirements come to your mind concerning the following issues and would your organisation be able to provide these resources?

The word cloud of answers for the above mentioned question shows a quite clear and organised picture. The centre of all opinions and answers received in all partner countries is focused on the adult education organisation itself which plays a crucial role in the application and success of VR technologies in adult education. Since the use and implementation of VR in adult learning requires some kind of infrastructure which cannot easily be provided by a single adult trainer, educator or expert, the provision of these resources by an adult education institution is crucial. Besides this the answers given focus very much on the training needed for adult trainers to be able to use and well integrate VR learning into adult didactical processes. Some interviewees do directly focus on the financial investment needed for the use of VR and see the possibility to receive these technological devices for their learning process quite critical and somehow limited. “The requirements would be enormous, VR is an entirely new form of technology and almost nobody has any experience of it. It will also cost a huge amount of money to implement in schools because the hardware is very expensive at the moment.” E.g. interviewees from Cyprus mention that it would be important to purchase VR systems which are easy to use, not too complicated so that there will be no frustration from the beginning on the level of learners but also on the level of adult trainers. We have to be aware that with VR technologies we are introducing something really new and different into the world of adult learning and there is a certain risk attached to this, therefore the focus within the training programme and also for any recommendations given for software and hardware purchase (or rent) must be on easy to use, quite self explaining and introductory systems. Only in a second step the system would allow and be open for more complex and differentiated solutions. Some experts asked do also mention the need for a good internet connection, mobile broadband connection etc. which also are worth considering when giving recommendations for systems and hardware overall. In general the answers received can be divided into two groups of needs and requirements: money and training (of trainers).

What kind of specific competences are required of trainers that plan to implement VR in their training?

In a next step the interviewees have been asked about the specific competences which are required on the level of trainers and had so the chance to reflect for themselves what would be important for them to be able to include VR technologies in their training programmes. Again, the word cloud analysis for this question shows a very clear picture. Nearly all trainers asked in all the partner countries mention two core fields of expertise (or competences) which are relevant and needed: technical / technological competences as well as didactical competences for the use of VR in a adult learning process. Besides this experts mention competences like planning skills, flexibility, empathy for the learners group etc. Overall, however, we can see that the outputs and offers of the ViRAL SKILLS project (and others of course) should focus on the technological as well as didactical /pedagogical competence level. Surprisingly, when reading through the single answers provided from experts, the need for additional learning and training seems to be by far bigger on the level of technological competences in relation to didactical competences. One may assume that in the 21st century we have already overcome technological barriers based on a lack of IT skills on user level, but no. This does also mean, that a good part of the training course developed and provided within the ViRAL SKILLS project has to focus on technological and digital competences. It seems that getting people and especially adult trainers more comfortable in using technology (and VR technology in particular) would be the key for success in the end. Adult trainers and educators are mostly well experienced in developing training plans and sessions, they know how to select and combine different learning formats and ways to cover a certain topic, but only if they know the technological potential of VR they will be able to include this technology into the canon of potentially available learning tools / strategies.

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Apart from the possibilities of your organisation, can you think of any barriers that could prevent VR to be used in adult education settings?

Despite the fact that the word cloud picture appears to be a little more diverse for this question than for the previous two, the picture as such does fully support the assumptions and deductions made above about possible barriers, constraints or problems in the potential use of VR technology in adult education. Again, we see words appearing in prominent positions such as technology, digital, infrastructure, software but also skills, learning, education etc. Besides this the adult trainers and educators asked to also very often mention two additional barriers. One would be the cost component, which many experts do see a little critical and also pessimistic in the field of adult education. This refers to the fact that the costs attached to the use of VR technology could be quite considerable and especially within the field of general adult education (but also in the field of vocational adult education) the financial resources and budgets are really low. The second would be hesitating learners. Especially for low skilled adults and senior/older learners experts mention a certain degree of hesitation and barriers against new technology together with the fear to get lost in this new, fast and immersive learning world.

"The limitation of the adult learner, especially low skilled and low qualified. This type of training could be very off putting with them believing they would not be capable of being involved in it."
"Many older adults may have a fear of using technology as it is not familiar to them."
"The digital gap, meaning e.g. the lack of basic digital competences of the elderly, might be a problem when trying to integrate VR in adult education."

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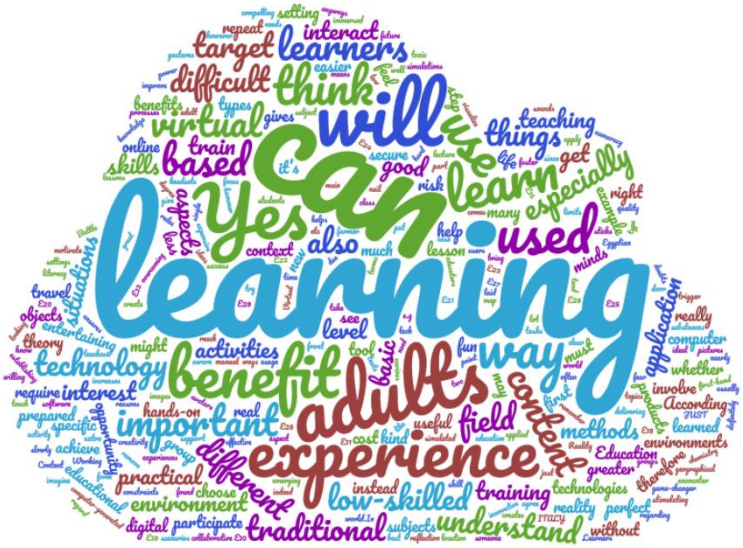
Do you think low-skilled/qualified adults could benefit from VR based learning?



When asked about a possible benefit of especially adult learners with low skills or low qualification, the picture received is impressive and promising. The terms like yes, can, will, benefit etc. are the most important ones and this shows very clearly the positive value the adult trainers see in the use of VR technologies especially also for the learning process of low skilled or qualified adults. Mainly the arguments given by trainers refer to the fact that especially learners with low skills or qualifications are not always too confident with adapting to new situations, being flexible and react as fast as expected. The virtual learning environment puts them in a new situation where they can train certain tasks and learn about content in a nearly real environment but with the protection of their own virtual space. This protected but at the same time real environment would probably be the greatest benefit of VR technologies for the target group:

"Learners tend to experience some degree of confusion when they encounter new challenges or unfamiliar situations. This usually happens when their minds contradict what the theory teaches. In that case, incorporation of alternate reality technologies gives you the power to remove any doubts from the minds of your online learners. With these technologies, you put your online learners in a situation where they can try out their own ideas and reach their own conclusions. This also ensures that the lesson learned sticks with them and creates an emotional connection."

"VR is perfect to train the activity first in a virtual world before the skill learned is applied."

"I think that it will be an ideal tool which will help them very very much! It will trigger the interest of low-skilled/qualified adults, it will give them more motivations to learn, excitement and curiosity to use the equipment and interact with it. Through VR, many topics can be presented that are difficult for them to understand or are complex to be understood for many reasons. With the use of VR these concepts can be taught in a more interesting way with hands-on activities."

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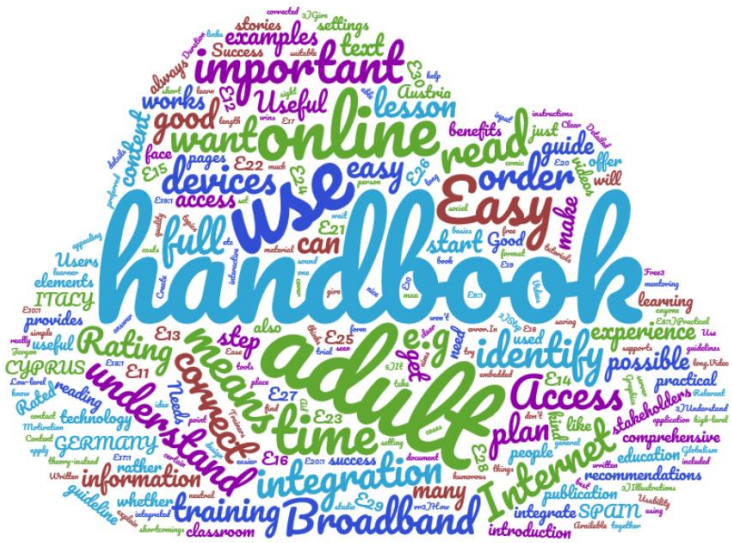
Success factors for an online handbook for adult educators on how to integrate VR in adult learning settings:

In the last three questions, the participating adult trainers and educators have been asked to explain more in detail the score they gave for the three core outputs which will be presented within the ViRAL SKILLS project together with some recommendations for the setup of the single output. For this the interviewees were asked to mention at least 3 success factors for the single output. For the online handbook for adult educators which will be the first output provided, the core success factor mentioned were:



- Quick wins!“→ Trainers have to experience some kind of success very early when reading the handbook
- Best-practice examples →Users want to read success stories, best practices and stories of other people
- Making costs transparent
- Use language which is easy to read for non-VR-specialists
- Don not make it too academic
- Give recommendations how mentoring and social elements can be integrated in a VR learning setting
- Not too much theory-instead have guidelines
- Graphics where possible and not only text
- Illustrations when possible
- Clear, simple, logical
- Easy to read. Not too long. Video should be preferred

Success factors for an online database of VR systems, technical/structural requirements, and how to set up a VR studio:

Asked about potential success factors for the second output of the ViRAL SKILLS project, the online database of VR systems showing the technical and structural requirements as well as how to setup an own VR studio, the interviewees did also mention a number of crucial factors which would be important to consider to achieve a high target group relevance:

- Include a part: "Look what has been done" →means to integrate successful projects that used the VR-Hardware listed or to include stories that state what users already successfully implemented with it (can be short)
- Attractive layout and graphic design, well thought-out searching tool →means that you also find what you need without knowing all technical vocabulary
- Availability →means e.g. that the database is also available on the mobile phone
- Courage for the gap →means that not everything has to be explained in detail, since adult educators do not have the time to read it
- Pros and cons of different VR systems. Tips with what to take into consideration for each VR system
- Hyperlinks in the text for more information, examples with images, option to read more about some systems
- Build on knowledge gradually
- Use the most suitable VR to match audience and content
- Form easy starting to high level. Costs declaration. Manpower.
- Free and open source software should be emphasised

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Success factors for an online collection of VR software reviews suited for the needs of adult learners.

The next question category was focusing on the potential success factors for an online collection of VR software reviews which is one of the core outputs of the ViRAL SKILLS project and will be provided in the form of an online E-thek of potentially useful VR software apps for adult education.

The interviewees have generally been very keen on this output as it would give them a preselection of possible software applications they could use and they do not have to test hundreds of software products which would be far too time consuming. For the development of the online database of software applications the respondents from the target group mentioned the following core success factors which should be considered:

- Need to find best-practice examples → the online collection should show you a good example how a VR app was used in a similar context so that you only have to adapt this solution path a little for your own learning context.
- Well thought-out searching tool →means that you also find what you need without knowing all technical vocabulary. Language used easy to read for non-IT experts
- Intuitive and easy handling
- Comprehensibility
- Attractive graphic design →use a little colour
- Description of experience (positive or negative)
- Suggestions for barriers we might face
- Explanation of difficulties to be faced and how to avoid them
- Current reviews not old ones
- Easily accessible
- Shows graphics
- Free and open source software should be emphasised
- Reviews should be unbiased and not favour any particular company
- Teachers and students should write reviews
- Should outline areas of possible application
- Explain why the software is useful
- Helpful tips
- Easy to access suitability

Success Factors/points for a blended training course regarding Virtual Reality for adult education:

Finally the third planned output was put in the focus of the interviews and target group members have been asked to define crucial success factors for the planned blended training course regarding virtual reality for adult education. The target group members mentioned a number of important factors which should be considered in the further development of the training programme.

Most important were:

- Just 1 ½ day classroom & rest should be online-coaching. Or classroom sessions shorter and in the evening! (trainers to not have time for one week training!)
- Trainers must have a product in the end →means that in the course they should develop something (e.g. one VR session) that they could use right away in their own professional context.
- Make trainers curious→e.g by inviting someone (e.g. a software programmer) who can really quickly show what is possible with VR (keyword: hackathron) so that trainers want to learn more
- Shorter duration of classroom training
- Provide a trial offer which shows adult educators what they can expect (like a teaser)
- Provide orientation and the possibility for exchange of ideas and communication
- Start from scratch →means also to think of learners who haven't heard about VR before.
- Include a lot of practical training where learners can experience VR themselves
- Do not offer the five days classroom training in one week →plan carefully and take in mind that usually training programmes do not last longer than two days
- Extensive interaction with VR equipment (sufficient hours of training)
- Demonstration of different ways to use VR for teaching and learning
- For the face to face course learners should be able to apply what they have learned in the online course
- The length of each training session should not be too long.
- Not 5 continuous days. Have some time to implement something in-between trainings.

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SUMMARY, DEDUCTIONS, RECOMMENDATIONS:

Initially it has already been mentioned, that a high relevance of outputs for the foreseen and envisaged target group is one of the most crucial factors for success and sustainable use. This was in fact the main aim and reason for the implementation of this brief target group survey. In front of this it seems to be important to extract some core deductions and recommendations for the development of the outputs especially the handbook containing also the database of VR technology as well as software applications (IO2) and the ViRAL SKILLS training programme (IO3). On the basis of the received data from the quantitative and qualitative survey part and in front of a pure phenomenological approach followed we would be able to make the following deductions worth considering:

- When trying to introduce VR technology in adult education and especially also for the target group of low skilled / qualified adults, we have to be aware that we are entering a new and highly innovative area. Out of this reason it would be important to keep the theory of innovation uptake in mind, which divides between 5 different steps. It would be important that within the target group to identify representatives of the innovators, the early innovators, early adopters and early majority. When approaching, inviting and selecting participants for the pilot tests of the training programme in the partner countries, it would be important to focus on these three groups to foster the quick and solid adoption of innovation and in this case the application of VR technology in adult education.

- Overall with the target group we have seen a generally very positive attitude towards this innovative technology, there seems to be a certain curiosity within the target group and this should be used when developing, testing and mainstreaming the project outputs. A large majority of the respondents have stated that they would be interested in the approach, would like to get more information and training on the subject and would also estimate the potential of VR technology in adult education.

- Finance matters. In many answers to different questions we can see, that there are some strong concerns related to the financial impact of the introduction and use of VR technology in adult education. In general the adult education arena in Europe is not really in a very lucky financial position and respondents largely express that there could be not enough financial resources available. This has two consequences. On the one hand when selecting and introducing and showing relevant VR technology on hard- and software level, the partnership should select examples which are affordable to a larger group of people and institutions. On the other hand the financial dimension should be treated as open and transparent as possible. For all systems introduced the approximate costs should be stated, also for the software, however, especially on this level open source or at least free software should be preferred and selected in first place as good as possible. In addition to this, maybe, the project and especially the handbook and/or database could also dedicate some information to possible and potential funding mechanisms for technology investment. Learning technology and digitalisation in learning is a major political trend in most of the European countries which do in many cases also provide some co-funding for technology investments.

- The survey has clearly shown, that there are some severe concerns mainly related to the digital and technology competences needed on the level of adult trainers and educators. This is even more relevant than the challenges on pedagogical / didactical level. The training course developed needs to include a good part of technology training, digital competence development and also issues as maintenance of VR systems and trouble shooting in case of problems.

- The handbook and all databases should clearly highlight the potential and possibilities of VR hard- and software for the training and development of adult learners and especial low skilled / qualified adults in the sense of basic education.

- In the survey we have discovered some concerns from the target group towards a too long and too theoretical training programme which covers five days in a row etc. The partnership should be really careful with the development and curriculum design to take all these concerns into consideration.

- Despite the fact that the training course in the ViRAL SKILLS project does have a strong distance-learning dimension, the content of the whole VR embedding in adult education should basically focus on the use of VR in face to face training sessions in adult education. Quite many trainers mention that they would like to use VR technology in their programmes, however in the course of face-to-face training setting; this should be considered in the curriculum as good as possible.

- In the qualitative survey, the trainers have mentioned a number of fears on personal level, health level and also related to the learners and their social learning dimension when working with VR in adult education. These need to be considered in the training programme setup as well also (especially for the health related fear) become a part of the training content itself. Trainers need to be aware of any health related challenges or problems when using VR in their classes of adult learners.

- In the qualitative survey the participating trainers from the partner countries have stated a large number of important success factors for the core outputs of the ViRAL SKILLS project. There is no doubt that all of them should be considered as good as possible to achieve a highest possible target group relevance. However, in front of the financial and time limits within the ViRAL SKILLS project, it is certainly not possible to consider all of them fully (e.g. the production of videos for the explanations in the handbook). Out of this reason, it is suggested to categorise the received success factors into 3 categories (crucial / nice / later). At least it should be tried to achieve and implement the “crucial” success factors and some of the “nice” ones.

Finally, we want to thank all project partners and especially the adult trainers and educators participating in this brief survey for their efforts and valuable contributions to a highest possible target group relevance of the project outputs. We are looking forward to welcoming interested target group members in the pilot testing and external evaluation of the training programme in the course of the ViRAL SKILLS project.

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