

## Educational Ventures

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### WP3 - 3.2 Immersive experiences



### SUMMARY OF THE FOCUS GROUP DISCUSSIONS IN POLAND

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## INTRODUCTION

The focus group study was carried out as part of the Erasmus+ project „Educational Ventures” (KA220-SCH-000151181), (work pack n°3 Technologies).

The aim of the survey was to obtain opinions on the proposed modules and technologies of the Educational Ventures model.

Specific objectives:

- assessing the effectiveness and feasibility of using augmented reality (AR) and virtual reality (VR) in specific educational environments,
- exploring the possibilities of incorporating technology into outdoor educational activities,
- assessing how the proposed technologies support the development of skills such as critical thinking, collaboration and creativity,
- assessment of the effectiveness and practicality of the proposed technologies from the point of view of educators,
- collecting opinions on user experiences regarding the effectiveness of using technology in teaching,
- learning about parents’ views and concerns regarding the use of new technologies in education.

## 1. METHODOLOGICAL NOTE

The study was conducted by the Association „CRAS” - Social Activity Development Center on October 31, 2024 in Rzeszów (Poland), using the qualitative technique of a focused group interview. Focus group interview (FGI), i.e. a discussion led by a moderator, based on a scenario.

The rules that applied during the discussion itself were as follows:

- the audio from the meeting was recorded – participants were notified about it,
- everyone had the right to express their opinion freely and undisturbed,
- participants were not obliged to agree with each other – critical comments were allowed,
- the meeting was confidential – participants were only asked to provide their name (write it down on a piece of paper to enable mutual communication),
- everyone was assured that the recordings from the meeting would not be made public in any form (the recordings were used only for the purpose of preparing this report).

## 2. RESEARCH SAMPLE

The study covered one group consisting of representatives of three categories of respondents:

- teachers – 3 people,
- students – 3 people,
- stakeholders, including parents, teaching methodologist – 4 people.

The selection of the group was dictated by the specifics of the project. The invited people are representatives of the direct recipients of the Educational Ventures model and people who may be potentially interested in its subject matter.

## 3. CONCLUSIONS FROM RESEARCH

### 3.1 Immersive technologies (AR, VR)

Representatives of all three groups of respondents taking part in the study positively assess the effectiveness of AR and VR in teaching. They believe that these methods are more interesting than traditional communication.

This is confirmed by the following statements:

- *„Technologies not only facilitate access to knowledge, but also allow teachers and students to learn interactively in a way that was previously unattainable“,*
- *„VR and AR increase the chances of engaging young people in learning“,*
- *„Learning with the use of such modern tools will certainly be effective because it will interest young people more“,*
- *„Learning by being in another reality is certainly more effective than sitting in ordinary books, knowledge gained by experiencing something is better retained“,*
- *„You have to keep up with the times, VR really gives you a lot of possibilities“,*
- *„Of course, the effectiveness of using VR and AR in schools is the future of education, it is a very interesting solution and attractive to recipients“.*

The benefits of using immersive learning technologies, especially in the context of complex or abstract topics, included the ability to convey educational content in an attractive and more understandable way for young people, the ability to illustrate phenomena and topics that are difficult to present using traditional methods most often used in school settings. VR and AR technologies allow for multiple repetitions of exercises in a safe environment, which allows for the acquisition of new skills without fear of the consequences of mistakes. Greater student involvement in classes using immersive technologies was also mentioned. It was emphasized that students enjoy participating in this type of class. Attention was paid to the development of digital competences of both students and teachers.

The respondents said that:

- *„The advantage of using modern technologies in education is increasing the attractiveness of the teaching process. Interactive materials, video lessons or simulations can make learning more engaging and enjoyable for students, which translates into greater engagement and better educational results“*,
- *„ (...) they allow you to see and touch what cannot be shown to children in ordinary pictures“*,
- *„It is a tool thanks to which we can support the learning process in an interesting and attractive way at every stage of education, especially with complex topics“*,
- *„It can be an interesting addition, a tool that will enrich classes and allow you to convey new content in an unconventional, more understandable way“*,
- *„Immersion enables a much better educational and even therapeutic process“*,
- *„The use of these technologies is primarily a departure from paper and flat images, the ability to see objects, characters, animals, their interiors in 3D. Developing logical thinking without spending money on paper teaching aids. An empty classroom, VR glasses and learning begins!“*

It is difficult for the study participants to assess how students cope with new technologies, especially in the school environment. Students have no problem using new technologies in independent learning, but their experience with VR and AR, especially in school, is low.

- *„I am interested in new technologies and use them while learning, but at school we don't deal with VR or AR at all“*,
- *„I would really like such modern classes. It's a pity that the school does not use this type of technology. It's a pity that the school does not have this“*,
- *„I don't have my own experience in using these technologies at school. In our country, it's still a rarity. I have no opinion on this subject“*,
- *„I guess it will be a long time before we will be able to enjoy such "delicacies“*.

Participants believe that AR and VR can influence the development of soft skills. The most common are: teamwork, stress management, critical thinking. Some respondents are unable to indicate how AR and VR support the development of such skills.

Statements:

- *„I once read about communication training conducted in virtual space, they are supposedly very effective, but I don't know what it involves“*,
- *„By carrying out a task together in virtual reality, you can learn to cooperate and work together“*,
- *„In a virtual situation that is difficult and causes stress, you can learn to deal with it. In reality, it is more difficult. VR allows you to train your stress response“*.

### 3.2 Outdoor learning

When asked about the possibility of using immersive technologies during outdoor activities, the respondents mentioned several examples: history and culture lessons – showing images from the past in a virtual form and comparing them with the contemporary state, nature lessons – showing changes in nature related to evolution, climate change, the life cycle of plants or animals, specialist classes related to the area of education – forestry, agriculture or spatial planning.

Respondents said:

- *„Good idea, I don't know exactly how to use it outdoors, maybe teaching history? You can take students to the field and show them what certain places looked like in the past",*
- *„Young people are interested in climate change, they can be shown using VR and AR what the world will look like if they do not take care of nature, for example, where there is a meadow now, there will be a desert because the climate is warming",*

Several people had no ideas for using VR and AR in outdoor education.

- *„I don't know much about immersive technologies, it's hard for me to figure out how to use them outdoors".*

Respondents mentioned the following benefits of such education:

- the ability to provide students with engaging and realistic experiences, which makes teaching more effective,
- students staying outdoors,
- the ability to simulate potential work environments, in the case of courses such as forestry or architecture, where students can practice various procedures in a virtual environment.

Participant statements:

- *„When students virtually move into another reality, it will be easier for them to understand certain processes, for example those related to their future profession. A forester can be shown what the area will look like after planting a forest in several decades, an architect what a place with a new building will look like,"*
- *„Thanks to this form of learning, students can travel to other times and see how people lived in the past, which is important because learning theory does not interest them at all".*

Respondents see various challenges and limitations related to using technology in non-standard conditions. The problem of limited competences of teachers in the use of modern technologies was pointed out. Financial constraints of schools were mentioned. Parents drew attention to the fact that young people spend too much time in front of electronic device screens.

The responses included the following statements:

- *„When developing new forms of education and technology, one must keep up with progress. The limitation is the lack of educators who can work in this way, using VR and AR”,*
- *„The challenge is to finance the education system so that immersive education can be used on a daily basis in Polish schools”,*
- *„I see no limitations in the use of technology outdoors, the teacher's willingness and ideas are enough”,*
- *„In my opinion, the limitation is the lack of ideas for using VR and AR in school activities. Teachers are not prepared for this, they will not come up with such ideas themselves”,*
- *„We need to be careful about the challenge of young people becoming addicted to technology. We want to teach but again using technology. Maybe a simple walk in the forest would be better”.*

The people taking part in the survey had divided opinions on whether technologies allow students to better connect with nature or the environment they live in. 8 people thought that technologies help build relationships with the environment. The remaining respondents had the opposite opinion.

The respondents said that

- *„It's hard to tear my son away from the computer. I ask him to leave the house, but he doesn't want to. Maybe this form of education, which uses technologies he's interested in, will encourage him to learn and leave the house”,*
- *„A cool idea to teach kids. Young ones like VR, so maybe they'll like learning with it outdoors”,*
- *„I really like this idea. I would love to take part in the history lessons we talked about earlier. The combination of virtual reality with real surroundings will definitely interest children”.*

Teachers point out that immersive teaching methods are more effective. They also admit that using these methods increases students' motivation for classes.

### **3.3 Soft skills**

In the discussion on the relationship between technologies and the development of soft skills, the participants came to the conclusion that immersive solutions can help strengthen critical thinking, cooperation and develop creativity. The gathered people, especially students and teachers, provided many examples confirming that AR and VR support the development of the above-mentioned competences.

Students shared their experiences with using online platforms that use AR and VR. They noticed from their own experience that using these technologies forces cooperation and stimulates creativity. In their opinion, even strategic games have an impact on the development of soft skills, especially critical

thinking. In the opinion of the participants, games require coping with changing conditions and challenges, deep analysis, and making decisions based on available data.

Respondents indicated that this is because we are more likely to draw conclusions, deduce and think critically by experiencing something than by hearing or reading about it.

One of the interviewees stated:

- *„In VR games, you often have to solve complex puzzles in real time. This develops critical thinking skills. You have to analyze a problem from different perspectives, test different actions and thus learn from mistakes“.*

One teacher participating in the discussion emphasized that VR allows for simulating complex situations that require creative thinking and problem-solving. In his opinion, students can practice solving tasks in different situations. These can include negotiations, making decisions under time pressure, or quickly adapting to changing conditions.

Respondents also noted that education using immersive technologies can have a positive impact on communication skills. For example, VR allows for realistic conversations with virtual characters, which can help develop verbal and non-verbal communication skills. Users can learn how to express their thoughts, listen carefully, and respond appropriately to different situations and emotions of the interlocutor. VR can simulate speaking in front of a virtual audience. Such an experience allows you to overcome stress, practice speaking techniques, and control your voice and posture.

To sum up, according to respondents, immersive technologies provide broad opportunities for the development of various soft skills.

### ***3.4 Opinions of the study participants – teachers***

In the opinion of teachers, the assessment of the effectiveness and practicality of using AR and VR in education is varied. These technologies arouse great interest due to the potential benefits they bring. Teachers note that immersive technologies have great potential in attracting students' attention and increasing their engagement. Thanks to their use, students can experience knowledge in a more practical way. AR can support the teaching process, allowing educational materials to be adapted to the individual needs of students, which helps to diversify the level of difficulty and adapt to different learning styles.

As difficulties related to the practical use of immersive technologies, teachers indicated the low availability of appropriate hardware and software. It was emphasized that the costs of purchasing equipment can be a barrier, especially in schools with limited budgets.

Teachers noted that although technology has potential, its integration with traditional teaching methods is not easy. Many people in the educational environment may be reluctant to change their

habits and teaching methods. Traditional teaching methods based on lectures or working with textbooks can be deeply rooted in school practice, which makes it difficult to adopt new technologies. Change requires a different approach to teaching and appropriate preparation of teachers as well as providing equipment.

The respondents said that:

- *„In Polish educational institutions, special attention should be paid to two issues. The first concerns the availability of training for teachers in the use of VR and AR, thanks to which they will gain basic knowledge in this area and improve the necessary skills. The second issue, on the other hand, refers to the quality of equipment that is or will be available in schools, which requires appropriate financial outlays”,*
- *„The cost of purchasing VR and AR equipment can be a barrier, especially in schools with limited budgets”,*
- *„VR and AR can be an interesting addition that will enrich classes and allow for the delivery of new content in an unconventional way. But how to combine it with the curriculum and an overly extensive core curriculum”.*

In summary, according to teachers, implementing new technologies in education involves many challenges, but also huge potential. The challenge is to prepare properly – teachers and the entire hardware infrastructure of the school. Without the right tools, teachers are not able to effectively introduce technology into their work.

It is important to take the right approach to integrating immersive technologies into the curriculum. The use of VR and AR also depends on the competences of teachers, which should be strengthened through participation in training. They must know how the technology works and have the skills to use it in educational practice. Participants emphasized that they would like to participate in comprehensive training on both technical and pedagogical aspects, so as to effectively use technology, engage students, support their learning and achieve educational goals.

### ***3.5 Opinions of the study participants – students***

Students positively evaluate their experiences with VR and AR. They believe that these technologies can be useful in education. They emphasize that they participate with great enthusiasm in classes using immersive technologies, not only at school, but also on their own. They are eager to use educational platforms, take part in online training. Some constantly use educational applications, for example, to learn foreign languages.

All respondents from this group stated that the use of immersive technologies significantly increased their motivation to learn and engagement in the educational process.

Students prefer classes using modern technologies instead of traditional teaching methods. In their opinion, classes of this type are more dynamic and have a more practical character. A diverse approach to learning makes the form of classes attractive and less boring. VR and AR technologies offer the possibility of receiving immediate feedback on learning progress. You can immediately see the effects of your actions, which affects the motivation to continue working and improve results.

Students also emphasized that thanks to VR and AR, they can work at their own pace, which increases the sense of control over the learning process and allows them to adjust the level of difficulty to their abilities. The ability to stop learning when tired is also important to them. This type of adjustment increases motivation because students do not feel overwhelmed by the material they have to master.

Statements:

- *„I prefer learning with VR and AR to traditional learning, of course. It's more interesting, I can influence the pace at which I learn and I get immediate feedback“,*
- *„I'm bored sitting at school and listening to what teachers say. I definitely learn better using IT technologies“,*
- *„When I use VR, I want to learn, I feel like I'm really experiencing something, I'm in another historical period or another place. It really motivates me to learn“.*

Students are aware of the risks associated with using new technologies. They perceive physical fatigue related to screen time as a risk, including headaches, sleep disorders, and eye strain. They point out the possibility of addiction to technology.

Too intensive use of AR and VR may lead to neglect of physical activity, exclusion from social life, and cause difficulties with concentration.

Student statements:

- *I „have friends who are really into games. They have a problem with that, they sit up all night and then don't get up for school. You have to be careful with the Internet, even when you're learning using modern technology“,*
- *„When I spend a lot of time on the Internet, I feel dizzy and my eyes hurt. I notice that I sometimes have trouble sleeping. You have to know moderation and be careful not to get addicted“.*

Young people are aware of the dangers associated with privacy and data security. According to students, AR/VR applications and devices collect huge amounts of user data. There is a risk that this data can be used in an unauthorized way or end up in the wrong hands. There are also concerns about threats such as hacking VR devices, which can lead to privacy violations or malicious attacks in virtual spaces.

Students said that:

- *„Just like the entire Internet, AR and VR do not necessarily have to be safe. I am afraid of data leaks or hacking. Such risks exist“,*
- *„Nothing bad has ever happened to me, but I know that it has happened to others. I am aware of the dangers. The Internet can be dangerous if you don't know how to use it properly and safely“.*

Students have no ideas for solutions related to improving security regarding the use of modern technologies. They only indicated that one should be careful when providing their personal data. The surveyed students unanimously stated that using AR, VR and online platforms is not complicated. They noticed a difference in operation and possible difficulties in use. Everyone considered online platforms to be the easiest to use. Their advantages included intuitive use, ease of access, minimal hardware requirements, and wide access to logging in. A difficulty may be the poor quality of the Internet, but according to respondents, such a situation is relatively rare in today's reality.

### **3.6 Opinions of the study participants – stakeholders**

Stakeholders express concerns about students using immersive technologies in education. According to respondents, this form of education can lead to addictions to games, applications or virtual worlds. Some parents believe that today's youth spend a lot of time in front of screens anyway. Learning in a traditional way takes them away from the computer or phone. In their opinion, introducing immersive technologies into the curriculum should be well thought out.

The proportion between VR and AR and traditional methods of learning is important. Parents would prefer to prevent situations in which the introduction of technology will further encourage young people to spend time in the virtual world. They would not want their children to devote too much time to technology at the expense of contact with peers, learning or physical activity. Only one person tried to convince the others that the use of technology in education should be used more often than traditional methods.

They said that:

- *„My son spends a lot of time in front of the computer and phone anyway. It's hard to drag him away from the screen. If he learns using them, he will live in a virtual world. I'm afraid that it will be at the expense of his normal life and, for example, relationships with peers“,*
- *„Modern technologies are important, but they must be implemented sensibly, so as not to harm children by spending too much time in front of the screen“,*

- *„My child has a big problem resisting the charms of modern technology. I have to be very careful not to overdo it. If he is to learn this way, it is necessary to prepare him properly, explain what it is, and possibly have the teacher check it“.*

Both methods of teaching, traditional and using modern technologies, are perceived by stakeholders as effective.

Two people believe that technology can support learning at home. If students learn using modern methods, including VR and AR, they will be more willing to sit down for lessons. Parents emphasized the great importance of mobile applications in learning. Some indicated applications for learning foreign languages, quzilet, educational platforms, platforms for creating notes as effective. Participants also talked about online courses that support independent learning.

Stakeholders said that:

- *„My son uses YouTube. He learns from math videos. He's doing well at it“,*
- *„For homeschooling, language learning apps are useful. It works like tutoring, it helped my daughter a lot“.*

The participants had no ideas for improvements related to the use of technology in independent learning. The only suggestion that emerged was related to the need to prepare for the use of technology in a prudent way, not posing a threat to their health, and counteracting addiction.