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VIRTUAL REALITY AS AN EDUCATIONAL TOOL IN EXTRACURRICULAR ACTIVITIES

Alina Florina RAȚIU, Ph.D., Cnd.,
"Babeș-BolyaiUniversity of Cluj-Napoca
alinaratiu19@gmail.com

Abstract: *The amalgam of contemporary educational challenges, combined with the specificity of today's learners, requires constant adaptation to innovative methods to meet their needs. Today's generation, often referred to as "digital natives," requires personalized learning, based on a variety of modern methods that stimulate their curiosity, develop their ability to adapt quickly and, last, but not least, keep them motivated to learn. With traditional methods becoming less and less appealing to these learners, the future of education needs to be reconsidered by integrating interactive approaches and innovative technologies. While specific formal curriculum activities can condition or limit the use of technologies that create the premises for enjoyable and interactive educational experiences, extracurricular activities are the appropriate space to explore the use of technology in general, and in relation to the topic of the article specifically, Virtual Reality. The use of virtual reality (VR) as an educational tool in extracurricular activities offers a transformative approach to student development, providing immersive, interactive and practical learning opportunities. This article explores the benefits and limitations of integrating VR into extracurricular activities, providing recommendations and examples for effective implementation of this technology.*

Key words: *virtual reality; educational tool; extracurricular activities; innovation; immersive learning.*

Introduction

Today's society is undergoing an accelerated structural transformation, with technology as a determining factor in all areas. This digital dimension can also be found in the school environment, with a significant increase after the Covid-19 pandemic. Despite the fact that the critical moment of the pandemic has come to reinforce the necessity and usefulness of technology in education, a large proportion of teachers still actively show reticence towards technological means and

educational methods based on them. This reticence is based on emphasizing the potential risks of digital education in relation to its benefits (Ceobanu et.al., 2020, p.99).

Without ignoring the risks and limitations of contemporary digital education, we cannot design an education of the future without being able to operate with current technological tools. One of these tools that can add value to the educational process is virtual reality.

The concept of virtual reality, introduced in 1987 by Jaron Lanier, can be defined in both a broad and a narrow sense. In the broad sense, virtual reality refers to any form of digital information generated and perceived using technological tools. In the narrow sense, virtual reality is an artificial reality that simulates the external environment, allowing the user to perceive and interact with it through multiple sensory channels. This is achieved with specialized devices, providing an immersive experience comparable to interaction in physical reality.(David et al. 2015.p. 37).

Cruz Neira et al. (1992) describe the main devices used for visualizing and interacting with virtual environments explaining how such devices contribute to the user's perception of and immersive interaction with the generated virtual environment. Among these devices are the virtual reality headset (HMD), the 'cave-like' device (CAVE), as well as various interaction tools such as motion tracking systems, joysticks or devices equipped with haptic sensors such as haptic gloves.

Another frequently used concept in technology, closely related to virtual reality, is augmented reality. Although both technologies are based on creating a captivating and immersive experience, there are considerable differences between them. Virtual reality involves the complete immersion of the user in a digital environment, achieved through a dedicated device, such as a VR headset, which isolates the individual from the real world. In contrast, augmented reality is the superimposition of digital elements, such as three-dimensional objects or virtual information, on top of the existing physical environment, using conventional screens and specific applications with augmented reality (AR) functionality.

Virtual Reality in Education

Virtual Reality (VR) is a versatile digital tool with significant applications in various sectors including education, health, science and technology. In education, VR is an innovative strategy, helping to modernize educational processes by creating interactive and immersive experiences that facilitate active learning. It enables the development of engaging courses that support the understanding of concepts through hands-on simulations and 3D explorations, thus stimulating engagement and reinforcing knowledge.

In a digital age, the children of this generation are already familiar with technology, and the integration of VR in education responds to the need to prepare future generations for an increasingly technologized professional environment. Especially at young ages, VR adds to experiential learning, stimulating curiosity and cognitive development through immersive environments that join play and exploration. Thus, technology transforms learning into an engaging process, fostering both emotional engagement and the acquisition of academic skills in an effective way adapted to the educational needs of the 21st century.

The benefits of immersive learning

Immersive learning, by its specificity as an advanced educational methodology, fulfills the necessary conditions to prepare all categories of learners effectively to face the complex challenges of the present and the future.

In POC project "EDUVR-Apps: Application for generating interactive multimedia courses using virtual and augmented reality" (2017-2019), a research on the current state of the art of virtual reality (VR) and augmented reality (AR) technologies was conducted, aiming to identify optimal solutions for the development of an application framework. The same research reveals the main benefits that learners can gain from immersive learning.

Among the benefits of learning in immersive environments for pre-school and school children we identify the following:

Communication Skills Development - Each component of the early learning process is supported by quality educational experiences that promote fundamental language skills such as speaking and listening. These skills initially manifest themselves through the expression of basic needs and progress to more complex forms of communication such as creative storytelling. The optimal way to develop vocabulary and understanding of syntactic structure is based on authentic experiences from the everyday environment, which allow context-specific and applied learning. Within this framework, education benefits significantly from the use of emerging technologies, and virtual reality (VR) is an additional immersive tool that facilitates active and experiential learning. It not only stimulates the cognitive process, but also contributes to the integration of an innovative educational environment adapted to the needs of contemporary learners.

Enhancing real-life experiences - Practical activities, such as visits to zoos or parks, are valuable pedagogical tools, providing concrete opportunities for pre-schoolers to explore and understand key aspects of the environment and real life. These direct experiences stimulate children's natural curiosity and contribute to the development of

knowledge about the living world and ecological relationships.Integrating virtual reality (VR) technologies allows educators to extend the benefits of these activities, reinforcing and extending learning. Through VR, children have the opportunity to interactively relive previously experienced moments, explore details inaccessible during real visits, and better understand complex concepts through engaging and personalized simulations. This approach combines direct sensory experiences with digital exploration, maximizing the educational impact on pre-schoolers' cognitive and social-emotional development.

Creating new educational opportunities - Learning is often influenced by limited access to direct experiences, which makes it difficult to understand abstract concepts or topics. For example, some learners have never had the opportunity to explore an ocean, observe marine ecosystems or visit a large city, which can narrow their perspective on the diversity of the world.

Virtual reality (VR) technology offers an innovative solution to overcome these limitations, enabling teachers to create engaging and interactive educational environments. Using VR applications, students can be immersed in scenarios that simulate the exploration of natural landscapes, metropolitan cities or complex phenomena. This approach stimulates natural curiosity, encourages exploratory thinking and challenges the imagination, giving students the opportunity to grasp concepts that they would otherwise perceive only theoretically.

In addition, VR can facilitate experiential learning by creating detailed and personalized virtual contexts that support the development of a deep and multidimensional understanding of the topics explored. This contributes to reducing educational disparities and broadening the cognitive horizons of learners, regardless of their background.

Contextualized learning- is an essential approach to increasing and reinforcing knowledge by creating authentic and relevant educational settings. While traditional methods provide a solid theoretical foundation, they can be limited in fostering deep understanding and an emotional connection with the subject.

Virtual reality (VR) technologies add an innovative dimension to the educational process by providing immersive environments that recreate real or imagined experiences. For example, simulating an exploration on the Moon, with the possibility to observe the Earth from space, transforms abstract learning into an interactive and memorable experience.

This approach integrates theory with sensory exploration, fostering both conceptual understanding and practical application of knowledge, and encourages curiosity and critical thinking, contributing to a holistic and innovative education.

Improving the process of memorization - Virtual Reality (VR) offers an effective educational tool, enhancing memory through personal and interactive experiences. The deep sensory and emotional involvement characteristic of immersive environments improves long-term retention, making it easier to recall information than traditional methods. This approach is particularly useful for learners with concentration difficulties, providing them with an engaging learning environment tailored to their needs. Integrating VR into education stimulates both memorization and cognitive and emotional engagement, contributing to innovative and effective learning.

Support for special needs students - Virtual Reality (VR) is a valuable educational resource, providing engaging and tailored learning opportunities for students with special needs. Particularly beneficial for children with autism, immersive experiences in 360-degree virtual environments allow them to acquire new knowledge in a safe and controlled environment. They can interact with educational content in a more structured and predictable way, reducing the anxiety associated with learning in a traditional physical environment. In addition, the fact that they can leave the virtual environment at any time, according to their needs and comfort, gives them a sense of security and autonomy, supporting self-paced learning. This approach favors a more effective integration of students with special needs in educational processes, providing them with a flexible and stimulating environment that contributes to their cognitive and emotional development.

Increasing engagement in the learning process - Student engagement is an essential element in successful learning, and virtual reality (VR) is a powerful tool for fostering it. The immersive and interactive environments created by VR capture the attention of learners, especially those in generations that are deeply connected to technology and cannot conceive of life without mobile devices. By using virtual reality, education becomes more engaging and relevant for these young people, who are attracted to innovative technologies. This approach not only stimulates interest but also contributes to an active involvement in the learning process, facilitating a more dynamic and motivating educational experience.

Developing empathy through virtual reality - Another major advantage of using virtual reality (VR) in education is its ability to facilitate the development of empathy among students. VR gives them the opportunity to experience situations from different perspectives, allowing them to gain a deeper understanding of the emotions, challenges and viewpoints of others. This immersion in experiences not their own helps them develop a more empathetic and complex understanding of human diversity. For example, by simulating specific

circumstances, such as living a life experience from the perspective of a person with a disability or an individual from a different culture, students can experience first-hand the realities of others. Thus, this educational approach supports not only the development of cognitive skills, but also the formation of a more sensitive and inclusive social and moral conscience.

Creating and Exploring through Virtual Reality - Virtual Reality (VR) provides active learning opportunities for students, not only through passive experiences, but also through the ability to create their own three-dimensional worlds. This approach allows students to express their creativity and apply learned concepts in a hands-on way by building and customizing virtual environments. Using 3D modeling tools, students can explore and experiment with design and construction processes, stimulating their imagination and critical thinking. This process of creation not only develops their technical and artistic skills, but also encourages them to actively explore and experiment with ideas in a virtual setting. In this way, virtual reality becomes a dynamic and interactive learning environment, where students are not just spectators but creators of their own educational experiences.

Another field in which virtual reality finds relevant application is vocational training, outlining the following favorable contexts:

Work Experience through Virtual Reality - A critical factor in the success of vocational training is the opportunity to expose students to unfamiliar work environments, giving them the chance to experience real-life scenarios before they actually enter the workforce. Virtual Reality (VR) is a valuable tool in this regard, as it allows the recreation of a variety of work environments through 360-degree videos from an employee's perspective. This immersive approach gives students a hands-on experience where they can observe and interact with specific workplace activities without being exposed to real risks or difficulties in an unfamiliar work environment. By integrating VR into vocational training, students can acquire essential competences, develop coping skills and better understand the requirements and dynamics of a job, thus preparing themselves effectively for their future career.

Skills development through vocational training-Effective vocational training involves a balance between theoretical learning and practical skills development, and virtual reality (VR) is a valuable tool in this process. By using VR, learners can rehearse training scenarios in a controlled environment without additional cost or risk, allowing them to hone their skills and build confidence in their own competencies. The repeatability and accessibility of these scenarios contribute to continuous and adaptive learning, supporting not only the development of technical skills, but also critical thinking and decision-making in a professional context. Thus, VR facilitates an active and experiential

approach to vocational training, improving students' preparation for the real challenges of the labor market.

Access to different perspectives through Virtual Reality - Virtual Reality (VR) gives students not only the opportunity to experience situations from the perspective of an experienced employee, but also to put themselves in the role of customers or service recipients, facilitating a deeper understanding of their needs and expectations. Through immersive simulations, students can directly experience the challenges and perspectives of other actors involved in a service process, thus developing empathy skills and understanding of the varied contexts in a professional environment.

This approach helps students acquire a holistic view of interpersonal relationships within a profession, emphasizing the importance of adapting behavior and decisions according to the needs of the client or beneficiary. Through immersive experiences, VR facilitates more effective empathic training, contributing to the development of a client-centered mindset and improving the ability to manage complex interactions in a professional setting.

Extracurricular activities and VR

Extra-curricular activities, conceptualized as complementary educational initiatives designed to support students' multidimensional development along cognitive, emotional, social and physical dimensions, provide a framework for exploring individual interests and developing skills that transcend the traditional teaching of the formal curriculum (Fredricks & Eccles, 2006).

Within this framework, the integration of virtual reality (VR) is emerging as an innovative strategy to enhance the impact of these activities by creating interactive and immersive environments. In this way, VR enables the diversification of extracurricular experiences, adapting them to the varied needs of students and facilitating holistic development in a relevant and technologically relevant way.

Significant advantages of using virtual reality (VR) in extracurricular activities include:

Total Immersion: VR technology allows students to "transport" themselves into varied educational environments such as virtual labs, digital museums, or interactive simulations, giving them the opportunity to learn through direct experiences in a deep and engaging way.

Expanded accessibility: VR facilitates access for students to educational activities that, for financial or logistical reasons, would traditionally be inaccessible. The technology thus reduces barriers to access, allowing students to participate in complex educational experiences regardless of external constraints.

Promoting collaboration: By creating interactive virtual environments,

VR supports the organization of group activities, stimulating interaction between learners and the development of teamwork, communication and problem-solving skills in a collaborative setting, without depending on physical proximity.

Examples of extracurricular activities based on virtual reality(VR):
Cultural education: immersive experiences that allow students to participate in virtual tours of famous museums, historical sites or cultural locations of global interest. These activities facilitate the exploration of cultural heritage in an accessible and interactive way, promoting understanding of diversity and historical contexts.
Science and Technology: Virtual laboratories offer the opportunity to conduct complex experiments in a safe and controlled environment. These simulated environments reduce the costs associated with physical equipment and eliminate potential safety risks, while providing an ideal platform for hands-on exploration and learning.
Vocational training: VR applications dedicated to simulating specific work environments such as medical interventions, engineering design or industrial operations. These activities prepare students for different careers by giving them a realistic insight into the requirements and processes involved in different professions.
Art and Creativity: Interactive virtual reality platforms that allow users to create three-dimensional artworks, design digital sculptures or develop innovative virtual environments. These applications stimulate artistic expression and offer new ways of creative experimentation and collaboration.

VR extracurricular activity in Green Week - "Virtual educational experiences - endangered animals"
The activity took place on 23.10.2023-27.10.2023 and was attended by 18 teachers and 218 pupils and pre-schoolers from different educational units: 5 primary classes from Vladimirescu Secondary School, 2 primary classes from Mândruloc Primary School, 5 classes from Horia Secondary School, as well as from Horia PN, Cicir PN and Vladimirescu PN2 Kindergartens.
The activity involved the development of an innovative educational experience using virtual reality (VR) technology to create an engaging and interactive learning environment for pre-school and school children. They had the opportunity to interact with savanna animals (VR ZOO Safari) , as well as marine species (VR Ocean Aquarium 3D), in a highly stimulating and engaging way, facilitating their understanding and approach to the world's diverse fauna and ecology. The virtual experiences were accompanied by detailed educational information and discussion sessions on relevant topics such as pollution and its impact

on the environment, as well as on endangered animals, stimulating awareness of current environmental issues.

In addition to the direct impact on pupils and pre-school children, the activity also played an important role in familiarizing teachers with the potential of virtual reality as a great educational tool that can revolutionize traditional learning methods. In this sense, teachers had the opportunity to experience VR technology and to understand how it can support the learning process, bringing an innovative and interactive dimension to teaching activities.

As a result of this activity, the following aspects were observed:

- Of the 18 participating teachers, none had previously had the opportunity to experience a virtual reality-based learning activity and had no contact with virtual reality glasses, either in the form of testing or direct observation.
- Of the 218 pre-schoolers and pupils involved, only 18 recognized or had heard of virtual reality glasses technology, and 5 of these had already had the opportunity to try out this technology in a previous activity.
- All participating teachers and children gave positive feedback on the activity, considering it an innovative and interesting educational experience.
- Four preschoolers were initially reluctant to use the VR goggles, expressing fear, but after experimenting with them, they expressed their appreciation of the activity.
- Some participants experienced brief episodes of motion sickness, but no significant incidents or long-lasting effects.

Given the success of the activity, it was subsequently implemented in five additional schools within Arad County.

Challenges and limits:

Generally speaking, the main obstacles associated with the implementation of virtual reality (VR) in the educational process include financial issues, which can be a significant barrier due to the high costs of the necessary equipment and software. Also, the effective use of VR technologies requires specialized training of teachers, which entails additional resources in terms of time and investment in training programmes(Kavanagh et.al., 2017).

In addition, accessibility can be a major challenge, as some learners may have difficulties related to technological infrastructure, socio-economic conditions or special needs that are not always integrated into the available solutions.

Conclusions and future perspectives

In conclusion, virtual reality (VR) is emerging as a particularly valuable educational tool, especially in extracurricular activities, offering students unique, immersive and complementary learning opportunities to traditional methods. It is important to emphasize that VR does not aim to replace established and effective teaching methods, but to energize and reinforce them, bringing an interactive and engaging dimension to the educational process. As technology continues to advance, it is expected to become more accessible and efficient, allowing wider integration into diverse educational contexts and opening up new innovative learning opportunities.Future research should aim not only to evaluate the long-term effectiveness of VR use, but also to identify the most appropriate ways of integrating it into curricular subjects so that it directly supports educational objectives. It is also essential to analyze the psychological impact that these immersive experiences can have on students, to ensure that the use of technology is not only educationally beneficial, but also safe and tailored to their needs. These research directions will help to strengthen VR as a valuable ally to traditional methods in developing the future of education.

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IMPACTS OF INDUSTRIAL DISHARMONY ON TERTIARY INSTITUTIONS IN NIGERIA

Christopher GBEREVBIE,
3Department of Public Administration, Faculty of Management Science,
Delta State University Abraka, Nigeria
christogberevbie@gmail.com

Onofere Princewill OKEREKA,
3Department of Public Administration, Faculty of Management Science,
Delta State University Abraka, Nigeria.

Akpomuvire MUKORO,
3Department of Public Administration, Faculty of Management Science,
Delta State University Abraka, Nigeria.

Abstract: *The issue of disharmony in Nigerian tertiary institutions has become a significant challenge, affecting academic quality, institutional stability, and national development. This paper examines the various cases and underlying causes of disharmony within Nigerian universities, polytechnics, and colleges of education. Through a critical review of the literature and empirical data, the paper highlights the adverse impacts of disharmony, such as reduced academic productivity, a decline in the quality of graduates, infrastructural decay, and loss of public trust in higher education. The study argues that addressing disharmony requires collaborative efforts between government, management of institutions, staff unions, and students. By promoting inclusivity, strengthening institutional autonomy, and ensuring effective conflict management mechanisms, Nigerian tertiary institutions can foster a more harmonious and productive academic environment.*

Key words: *disharmony: Nigerian tertiary institutions; infrastructural decay.*

Introduction

Nigerian workers prefer security and permanence in their workplaces over actualization and unusual redundancies, which are frequently seen and heard about. They want a good measure of love and interaction with their coworkers; they want to be seen, recognized, and not just heard; they want acceptance and full integration into all aspects of their work. These and other goals can be achieved if employees have adequate knowledge and kept up to date on organizational developments. The